Intereſt Improved.

SHEWING,

From a SMALL TABLE,

By a New, Eaſy, and Conciſe Method,

I. RULES for finding the Number of Days from one Month to another, &c. in all the different Caſes.

II. The Intereſt for any Sum, Rate, and Number of Days; likewiſe its Uſe in Diſcompt; alſo what any Annual Sum is *per* Day, and Daily Sum *per Annum*, &c.

III. A new Method of obtaining the Parts expreſſing Money; Intereſt for Years; with the Solution of ſeveral new Queſtions in Stocks, Brokerage, &c.

IV. A Supplement, giving the Conſtruction of the TABLE; where, by one eaſy Proceſs only, the ſame is performed by the Pen.

MAKING

The Whole uſeful for all Academies, Schools, Merchants, Brokers, Clerks, and Accomptants.

By *CHARLES BRENT.*

TO

William Wilkinfon, *Efq*;

Agent to his Royal Highnefs the

DUKE OF CUMBERLAND.

S I R,

THIS Treatife on the *Intereft Table*, of which you was the Inventor, naturally feeks your Patronage.

I fhall not ufe any Encomiums, fetting forth your Saga-

A 2   city

city and Abilities in Numbers,
&c. it being already known to
many, and from hence will con-
spicuously appear to the World.
I am,

SIR,

Your most humble Servant,

CHARLES BRENT.

PREFACE.

AS there are already a Multitude of Treatifes on this Subject, fome Apology may be expected for the Publication of this.

The moſt natural is that which is generally underſtood to all, *viz.* Every Author thinks

A 3   his

his preferable to any before extant.

In respect to the Table, the Dedication sets forth the Inventor, in which I have no farther Concern, than adjoining that Part for the ready obtaining the Number of Days from one Month to another, &c. and giving Rules for Explaining and Illustrating many of its valuable Uses.

The genuine and natural Principles on which it is built, far exceed any thing of the kind

I

I ever met with; and not only
contain all that has been pub-
lifhed on this Head, but the
Operations refulting therefrom
are as eafy, more accurate, and,
in general, more expeditious,
than by Books of ready caft-up
Tables; as the Trouble of many
Turnings-over and Takings-out
of the faid Books, are hereby a-
voided, and which at beft ad-
mit of a Doubt, whether fome
Miftake, or Typographical Error
may not have efcaped Correc-
tion.

That

That I may not be thought prejudiced in Favour hereof, I shall decline saying any Thing further, leaving it to speak for itself, and to the Judgment of all impartial Readers.

THE

THE

CONTENTS.

From p. 103 *to* 122,

A Supplement, whereby the Whole is adapted for the Use of Academies and Schools, without the Table, by the Help of one Multiplication only.

And in p. 103, *is*

Another Method of Contracting, when the Multiplier is inverted.

Lastly,

An Appendix, shewing in Mulptiplication how the same Products may be obtained without inverting, as with ; and the Demonstrations of both.

Interest

THE
EXPLANATION
AND
USE of the TABLE.

UNDER the Titles of the Months in the uppermoſt Row, are the Number of Days from the 1ſt, or any other Day of *January* inclufive, to the 1ſt, or fame Day of any ſubſequent Month excluſive, which is very conſpicuous.

Under theſe again reſpectively are the Complements to 365, being the Number of Days to *January* following.

To find the Number of Days from any Day of any Month-* incluſive, to the fame Day of any ſubſequent Month excluſive in the fame Year.

Subtract the Number in the upper Row under the preceding Month from that in the upper Row under the reſpective ſubſe-

* If Bills or Notes have been due any Number of Days, the 1ſt is reckoned incluſive and the Day of Payment excluſive.

B   quent

quent Month the Difference is the Anſwer required.

Thus from the 1ſt or 10th Day of *January* incluſive (0, being under it) to the 1ſt or 10th of *June* excluſive are 151 Days, from *February* to *June*, (viz. 31 from 151) are 120, from *April* to *June* 61.

To find the Number of Days in any one Month required.

Subtracting the Number of Days under the ſaid Month in the upper Row from that of the next ſubſequent, gives the Anſwer.

Thus 31 the Number of Days under *February* ſubtracted from 59 under *March*, gives 28 the Anſwer required.

In Leap-Years you muſt add a Day more, if your Inquiry begins in *January*, or *February*, and the ſubſequent Month be *March* or after, otherwiſe not.

If the Number of Days required be from different Days of the Months, ſuppoſe from the 3d of *January* incluſive, to the 17th of *June* excluſive.

From the 3d of *January* to the 3d of *June* are 151 Days as before. But as there are 14 Days more from the 3d to the 17th, by adding 14 to 151, gives 165, the Anſwer required.

If it be from the 17th of *January* to the 3d of *June*, from the 17th of *January* to the 17th of *June* are 151, but that being 14 Days too much, ſubtract 14 from 151 gives 137 for Anſwer, &c.   If

If the Number of Days required be from any Month to that of any other in the enſuing Year, ſuppoſe from *November* to *March* following.

To 61 in the ſecond Row, under *November*, (the Days wanting to the 1ſt of *January*) add 59 in the upper Row under *March*, (the Days from the 1ſt of *January*) gives 120, the Anſwer required.

If the Days of the Month be different, you muſt proceed as before, *p.* 2.

It muſt be obſerved that when the following Year is Leap-Year, and the Month in the ſaid following Year is after *February*, to add a Day more otherwiſe not.

If there are any Number of Days, *viz.* 117 to be added to thoſe of any Month, ſuppoſe *May* the 11th to find what ſubſequent Month and Day it will fall on.

To 120 under *May* in the upper Row, add 117, which makes 237, the next leſs is 212 under *Auguſt*, this taken from 237, leaves 25, *viz.* twenty-five Days beyond the 11th of *Auguſt*, which is *September* the 5th following, or as 237 wants but 6 Days of 243 to fall on the 11th of *September*, ſubtracting 6 from the 11th, gives the 5th as before.

If the Number of Days given to be added had exceeded 245 in the under Row, ſuppoſe 342 ſubtracting 245 therefrom, and to the Remainder 97 adding 11, the Number of Days

in *May*, this Sum 108 fought in the upper Row gives the 18th of *April* in the following Year, the like with others.

If there are any Number of Days to be subtracted from those of any Month, suppose 117 from the 11th of *May* as above, to 120 in the upper Row under *May*, add 11 the Days advanced therein next from the Sum, 131, subtract 117, gives * 14 *January* preceding.

If the Number of Days given had exceeded 131, suppose 342 subtract 131 therefrom, and the Remainder 211 from the next greater in the under Row which is here 214 under *June*, the last Remainder 3 gives *June* 3 of the preceding Year, the like with others.

In the Columns of the Interest Table Part the 1st, under Prin. (which signifies Principal) where the Place of the Interest is but one, as against Pence, there five Cyphers are supposed before it, where there are two Places, (as mostly against Shillings) four Cyphers, three Places, three Cyphers, four Places two Cyphers are respectively supposed prefixed (or before them,) but in the second Part of the Table they are to be taken as there express'd, and every of which in both Parts of the Table expresses the Interest of its respective Principal for one Day at 5 *l.* per

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* Exclusive if the 11th of *May* be inclusive, or inclusive if the 11th of *May* be exclusive.

Cent.

Cent. per Annum. This will be found very familiar and eafy by the following Examples.

EXAMPLE I.

WHAT is the Intereft of 7 *l.* for 365 Days at 5 *l. per Cent. per Annum.*
In the Table againft 7 *l.* is   959
Multiply by   365

$$\begin{array}{r} 959 \\ 365 \\ \hline 4795 \\ 5754 \\ 2877 \\ \hline \end{array}$$

Product | 350035

As the Intereft taken out of this 1ft Part of the Table with Cyphers pre-fuppofed, muft always confift of fix Places (*See* *p.* 4.) fo the Product muft likewife confift of fix Places for Parts, and where defective a Cypher or Cyphers muft be prefix'd or fuppos'd, to make 'em up fo many. —— The Product in this Example is juft the Number.

Next to Value this (or any other) Product, the Digit in the fixth Place to the left Hand muft always be doubled, which will then be Shillings, and the two next Places to the right Hand of it are Farthings, bating one out of every 25. So in this Example, 3 doubled

gives 6 Shillings, and the two next Places, *viz.* 50 bating one out of each 25, gives 48 Farthings, or one Shilling, making for the Interest required 7 Shillings, the other Figures being of no Value.

Hence 'tis plain, that 5 possessing the 5th Place to the left Hand (being the first Place of Farthings) is in Value one Shilling, and when no more Places succeed, a Cypher must always be suppos'd, or put after it to the Right Hand (as indeed to any other Digit in the same Place), three Places being requisite for valuing of Money.

E X A M P L E   II.

WHAT is the Interest of 54 *l.* for 98 Days, at 5 *l. per Cent. per Ann.*
Against 54 *l.* is (for Interest of one Day) 7397
Multiply by   98

$$\begin{array}{r} 5976 \\ 6657\ \end{array}$$

Product |724906

Here 7 doubled gives 14 Shillings, and the following 24 for Farthings; but when the Digit succeeding those for Farthings is 5 or upward, they without sensible Error, may be made one more, which here being 9, they become 25, and one bated gives 24 Farthings
or

or 6 *d*. making the Interest required 14 Shillings and 6 *d*.

EXAMPLE III.

W HAT is the Interest of 5 *l*. for 47 Days, at 5 *l*. *per Cent. per Annum.*

Against 5 *l*. is — — 685

47

4795
2740

|032195

Here are but 5 Figures in the Product, which, as there muft always be fix, (*See Ex. p. 5.*) a Cypher muft be put or fuppos'd before the 3 to the left Hand, which fhews there is nothing to be doubled for Shillings, and the following 32 are Farthings, bating one as before for 25, gives for Anfwer 31 Farthings, or 7 *d*. ¾, the Digit following the Farthings when under 5, (as here) may be omitted.

EXAMPLE IV.

W HAT is the Interest of 8 *l*. for a Day at 5 *l*. *per Cent. per Annum.*

Against 8 *l*. is — — 1096

Which multiplied by 1 is ftill the fame, but as there muft always be fix Places in the Product, fo here muft be two Cyphers put

or

or suppos'd before it, (*See p.* 4.) so that 1 now in the 3d * Place, will be but one Farthing *per* Day, and the following Digits make it a little more.   But if it be required for 365 Days, then   —   —   1096

$$\begin{array}{r} \text{Multiply'd by} \quad 365 \\ \hline 5480 \\ 6576 \\ 3288 \\ \hline 400040 \end{array}$$

Here are six Places in the Product, so that the first Digit 4 being doubled gives 8 Shillings, the other Figures being of no Value.

E X A M P L E V.

WHAT is the Interest of 26 *l.* for 287 Days at 5 *l. per Cent. per Annum.*
Against 26 *l.* is   —   —   3562

$$\begin{array}{r} 287 \\ \hline 24934 \\ 28496 \\ 7124 \\ \hline 1|022294 \end{array}$$

Here in the Product are seven Places, therefore six are cut off, as it must always be when

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* Note, where the Places in the Table, or any Product are but 3, or under, there the Interest is under a Farthing, as 3 Cyphers must be, suppos'd or prefix'd to them &c.

the

ply.

the Places are more, and thofe to the left
Hand will then be Pounds Sterling, fo that
the Intereft will here be 1 *l.* 0 *s.* 5 *d.* ¼ bating
one from 22, as it is fo near 25. *Note,* As
0 is in the firft Place, there is nothing to be
doubled for Shillings. (*See Ex.* III. *p.* 7.)

EXAMPLE VI.

WHAT is the Intereft of 63 *l.* for 229
Days at 5 *l. per Cent. per Annum.*
Againft 63 *l.* is   ——   ——   8630
                                          229
                                   ————
                                          7767
                                          1726
                                          1726
                                   ————
                                   1|976270

Here again is 1 *l.* next 9. doubled gives 18
Shillings ; and 73 Farthings, bating 3 from 76
for the 25's. But feeing that 5 in the 5th Place
to the left Hand (*See Ex.* I. *p.* 6.) makes a
Shilling more, therefore fubtracting 5 from the
7, and prefixing 2, the Remainder, to the 6,
it will then be 26 for Farthings, and bating
1 for 25, the remaining 25 will be 6 *d.* ¼, and
the Intereft 1 *l.* 19 *s.* 6 *d.* ¼.

EXAMPLE VII.

WHAT is the Intereſt of 7 *l*. 13 *s*. 4 *d*. for 365 Days at 5 *l per Cent. per Ann.* Againſt 7 *l*. (as in *Ex.* I.) is 959, and as there are 3 Cyphers ſuppos'd prefix'd (*See* p. 4. which here for Illuſtration let be ſupplied

Thus ——— |000959

Next againſt the 13 *s*. is 89, which with 4 Cyphers (*p*. 4.) is |000089

And againſt 4 *d*. is 2 with 5 Cyphers |000002

Sum |001050

From whence it is plain that 89 and 2, *viz.* 91 being added to 959 (which may be done mentally) is —— —— 1050

There being *(per p.* 4.) Two Cyphers ſuppoſed,

Therefore ——— ——— 1050*

Multiply'd by 365

525
630
315

Which (*per Rule p.* 5.) is 7 *s*. 8 *d*. |38 3 50

In the firſt Column under Principal, 6 *d*, 7 *d*.

* When a Cypher, or Cyphers are at the Right Hand of the Intereſt or Product they may be omitted, and ſo many places leſs, accounted for in the ſaid Product.

8 *d*. and

8*d.* and 9*d.* are (for the * Conveniency of hav-
ing Pounds only in the 3d Column) left out ;
but the Expreſſions of Intereſt anſwering to
them, are eaſily found.   Thus

	d.	*d.*					*d.*
Againſt {	4 & 2	are 2 & 1 *viz.* 3 is for 6
	5 & 2	3 & 1	4 ditto 7
	5 & 3	3 & 2	5 ditto 8
	5 & 4	ditto	ditto 9

N.B. Againſt 3*d* ½ in the Table is 2. which is
extremely near being exact, which alſo may
be taken for 3 *d.* or 4 *d.*

‡ 3. Therefore is more exactly for 5 *d.* ¼

† 5. *Ditto.* ———————. 8 *d.* ¾

‖ 6. *Ditto.* ——   —— 10 *d* ½

Though theſe laſt are the moſt accurate
Expreſſions and may be found to accord in
Queſtions where Half-pence and Farthings
are given, they, however may be omitted,
and the neareſt Expreſſion taken, formed as
at firſt above from the Table, from whence
in the Anſwers no Error will ariſe in the
Value of the Money.

* Otherwiſe the Shillings wou'd mix with the Pounds.
‡ Taken alſo for 6 *d.* as above.
† Ditto 8 *d.* or 9 *d. Ditto.*
‖ Ditto 10 *d.* or 11 *d. Ditto.*

EXAMPLE

E X A M P L E   VIII.

W HAT is the Intereſt of 53 *l.* 7. *s.* 9 *d.* for 134 Days at 5 *per Cent. per Ann.*

Againſt 53 *l.* is   — —   7260

Againſt 7 *s.* is 48 and 5 for 9 *d.*   53*

                            Sum   7313

                                  134

                             29252

                             21939

                             7313

Viz. 19 *s.* 7 *d.* $\frac{1}{4}$ (See Example 2. *p.* 6.)   —   } 979942

These Examples being fully ſufficient for explaining the Uſe of the firſt Part of the Table, I ſhall next proceed to that of the Second, which will be always when the Principal given is 73 *l.* or upwards.

E X A M P L E   I.

W HAT is the Intereſt of 73 *l.* for 125 Days at 5 *per Cent. per Ann.* againſt 73 is 101 and as 125 is the greater Number, place that firſt thus   125

        Multiply'd by   —   101

                          1|25

---

* Which might have been added mentally.

                                  Here

Here as there are but two Places of Parts in this Part of the Table which are to be taken as expreſt (ſee *Def. p.* 4.) there muſt be but two Places cut off in the Product, whence thoſe to the Left-hand (as before in the firſt Part) will be Pounds *Sterling*, the 2 in the firſt Place to the Left-hand of the Parts doubled, gives four Shillings, and the 5 ſucceeding a Shilling more, (ſee *Ex.* 1. *p.* 8.) making the Intereſt required 1 *l.* 5 *s.* 0 *d.*

From hence it is conſpicuous that every Intereſt in the ſecond Part of Table, as well as in any Product therefrom (excepting againſt 7300 *l.* and where it ends with o) muſt have a Cypher ſuppoſed or put after it to the Right-hand for Valuing, the ſame in Money. *See* p. 5.)

E X A M P L E II,

WHAT is the Intereſt of 2117 *l.* for 182 Days at 5 *l. per Cent. per Ann.*

Againſt 2117 *l.* is |29   Therefore   182 *l.*
            Multiply'd by |29
                             1638
                             364

viz. 52 *l.* 15 *s.* 7 *d.* ¼ which is   } 52|78†
   very conſpicuous

† A Cypher ſuppoſed.

C   EXAMPLE

EXAMPLE VIII.

WHAT is the Interest of 53 *l.* 7. *s.* 9 *d.* for 134 Days at 5 *per Cent. per Ann.*

Againſt 53 *l.* is — —	7260
Againſt 7 *s.* is 48 and 5 for 9 *d.*	53*
Sum	7313
	134
	29252
	21939
	7313

Viz. 19 *s.* 7 *d.* ¼ (See Example 2. *p.* 6.) — } 979942

Theſe Examples being fully ſufficient for explaining the Uſe of the firſt Part of the Table, I ſhall next proceed to that of the Second, which will be always when the Principal given is 73 *l.* or upwards.

EXAMPLE I.

WHAT is the Intereſt of 73 *l.* for 125 Days at 5 *per Cent. per Ann.* againſt 73 is 101 and as 125 is the greater Number, place that firſt thus

	125
Multiply'd by —	101
	1|25

---

* Which might have been added mentally.

Here

Here as there are but two Places of Parts in this Part of the Table which are to be taken as expreſt (ſee *Def. p.* 4.) there muſt be but two Places cut off in the Product, whence thoſe to the Left-hand (as before in the firſt Part) will be Pounds *Sterling*, the 2 in the firſt Place to the Left-hand of the Parts doubled, gives four Shillings, and the 5 ſucceeding a Shilling more, (ſee *Ex.* 1. *p.* 8.) making the Intereſt required 1 *l.* 5 *s.* 0 *d.*

From hence it is conſpicuous that every Intereſt in the ſecond Part of Table, as well as in any Product therefrom (excepting againſt 7300 *l.* and where it ends with 0) muſt have a Cypher ſuppoſed or put after it to the Right-hand for Valuing, the ſame in Money. *See* p. 5.)

EXAMPLE II,

WHAT is the Intereſt of 2117 *l.* for 182 Days at 5 *l. per Cent. per Ann.*

Againſt 2117 *l.* is |29   Therefore   182 *l.*
            Multiply'd by |29
                                   ‾‾‾‾‾
                                   1638
                                    364
                                   ‾‾‾‾‾

viz. 52 *l.* 15 *s.* 7 *d.* ¼ which is   } 52|78†
   very conſpicuous

† A Cypher ſuppoſed.

C   **EXAMPLE**

EXAMPLE III.

WHAT is the Intereſt of 2920 *l.* for
182 Days at 5 *l. per Cent. Ann.*
Againſt 2920 *l.* is 40 therefore   182
       ———   Multiplied by   40
Viz. — — 72 *l.* 16 *s.* 0 *d.*   72|80

Againſt 7300 *l.* is 1 *l.* which is the In-
tereſt of the ſaid Sum for one Day, and if
required for any number of Days will be ſo
many Pounds *Sterling.* And though this
Table extends no farther than 7300 *l.* yet it
is made general, and for any Sum as will
appear in the following Examples, which
treats of both Parts of the Table to-
gether, *&c.*

EXAMPLE I.

WHAT is the Intereſt of 200 *l.* for 73
Days at 5 *per Cent. per Ann.* when the
Principal given (as before, *p.* 11.) exceeds
72 *l.* you muſt always ſeek it in the ſecond
Part of the Table, and if not found exact,
take the next leſs and the Intereſt againſt it,
then ſubtract the ſaid next leſs from the
given Principal, and ſeek the Remainder if
under 73 *l.* in the firſt Part of the Table,
taking out alſo the Intereſt againſt the ſame.
Theſe Intereſts added together, will be that
of the given Principal for one Day, and
                              which

which multiplied by the number of Days
gives the Anſwer required.   In this Exam-
ple the next leſs neareſt number to 200 *l.* in
the ſecond Part of the Table is 146, and
the Remainder 54.   Then againſt 146 in the
ſecond Part is   ——   ——   02
and 54 in the 1ſt. (*ſee p.* 4)   007397
Their Sum (which now conſiſting of ⎫ ————
    ſix Places, there muſt be ſo many ⎬ 027397
    in the Product for Parts)   ⎭
multiplied by   ——————   73
                                    —————
                                    82191
                                    ₁91779
                                    —————
                                    1|999981

Here the Intereſt is firſt 1*l.* and valuing
the others they make 19 *s.* and 49 for Far-
things at firſt Sight, but ſeeing that 9 fol-
lows the Place of Farthings (as alſo 8 that
again) they muſt *per Ex.* 2. *p.* 6. be made
one more when they will become 50. *viz.*
1 *s.* ſo that the true Intereſt becomes 2 *l.*
as required.

It may be obſerved that the 0 before the
2 taken out of the ſecond Part might
have been ſuppoſed, as alſo that when the
Number taken out of the firſt Part conſiſts
of four Places they may be immediately
placed after thoſe taken out of the ſecond
Part, &*c.*

E X-

EXAMPLE II.

VVHAT is the Interest of 152 *l.* for a Day at 5 *per Cent. per Ann.*
Againſt 146 *l.* Part 2d. is (as before 02
and againſt 6 the Remr. Part 1ſt.   000822

|020822

Here it may be obſerved, that when the Intereſt taken out of the firſt Part of the Table, conſiſts of three Places, they are to be placed after the Intereſt taken out of the ſecond Part, with one Cypher inter-vening.

EXAMPLE III.

VVHAT is the Intereſt of 146 *l.* 13 *s.* 0 *d.* for a Day at 5 *per Cent. per Ann.* a-gainſt 146 *l.* is — — 02
and againſt 13 *s.* (*See Def. p. 3.*) 000089

|020089

Here it may be alſo obſerved, that when the Intereſt taken out of the 1ſt. Part of the Table conſiſts of two Places, they are to be plac'd after that taken out of the 2d. Part with two Cyphers intervening.

N. B. All the Intereſts taken for a Day may be valued by *p.* 5. *&c.*

E X-

EXAMPLE IV.

WHAT is the Intereſt of 146 *l.* 1 *s.*
for a Day at *5 per Cent. per Ann.*
againſt 146 *l.* —— —— |02
And agaiuſt 1 *s.* (*See Def. p.* 4.)   000007
|020007

Here it is laſtly to be obſerv'd, that
when Intereſt taken out of the 2d. Part
of the Table, conſiſts but of one Place, it
is to be plac'd after that taken out of the
2d. Part with three Cyphers intervening.

Hence follows this general Rule, that
when the Places of Intereſt taken out of the
firſt Part are leſs than four, by prefixing
Cyphers to make them that Number, they
may be immediately plac'd after thoſe taken
out of the ſecond Part.

EXAMPLE V.

WHAT is the Intereſt of 847 *l.* 12 *s.*
6 *d.* for a Day at *5 per Cent. per Ann.*
Againſt 803 *l.* is 11. againſt 44. is } |116030*
6027. and 3 for 6 *d.* Intereſt *ditto*

* Which o may be omitted, *See* p. 10.

EXAMPLE VI.

WHAT is the Interest of 809 *l.* 0 *s.* 7 *d.* for a Day, at 5 *per Cent. per Ann.* Againſt 803 *l.* is 11. againſt the Remainder 6 is of 822. and 4. for } |110826. 7 *d.* the Intereſt, *ditto*

EXAMPLE VII.

WHAT is the Intereſt of 803 *l.* 17 *s.* 8 *d.* for a Day at 5 *d. per Cent. per Ann.* againſt 803 *l.* is 11 againſt 17 *s.* is 116 and 5 for 8 *d.* Inte- } |110121 reſt, *ditto.* ———

EXAMPLE VIII.

WHAT is the Intereſt of 1022 *l.* 5 *s.* 9 *d.* for a Day at 5 *per Cent. per Ann.* Againſt 1022 *l.* is 14, againſt 5 *s.* is 34 and 5 for 9 *d.* Intereſt, *ditto.* } |140039

EXAMPLE IX.

WHAT is the Intereſt of 219 *l.* 1 *s.* 10 *d.* for a Day at 5 *per Cent. per Ann.* Againſt 219 *l.* is 03. againſt 1 *s.* is 7 and 6. for 10 *d.* Intereſt, *ditto.* } |030013

Which

Which Interefts as indeed all others are taken out with little more Trouble than a bare Infpection. *(See Rule p.* 17.)

The following Examples exhibit the Method of making the Table general for all Sums as mention'd (*p.* 12.)————

EXAMPLE I.

W H A T is the Intereft of 8760 *l.* for a Day at 5 *l. per Cent. per Ann.* Seek in the fecond Part of the Table the next lefs * Principal to the firft three or four Places of the Principal given, which fet directly under it, beginning at the firft Place to the Left-hand.

Thus the given Principal is 8760
Next lefs Tabular, *ditto*　　8,6　　againft it | 12

Here it is to be obferved, that the given Principal is ten Times as much as the Tabular Principal, it extending one Place farther to the Right-hand. The Intereft therefore will be ten Times as much as at firft taken out of the Table, which is made by fepera-

* Which at moft confifts but of four Places.

ting

ting one † Place thereof to the Left-hand Thus 1|2, whence the Place fo cut off becomes an Integral or 1 *l. Sterling*, and the Intereſt required 1 *l.* 4 *s.*

EXAMPLE II.

IF the given Principal be   87600 *l.*
    The Tabular *ditto* as before is   876
     Here as the given Principal extends two Places to the Right-hand, it is an hundred Times the Tabular Principal ; therefore two * Places of the Intereſt muſt be ſeparated or cut off to the Left-hand when the ſaid 12 will become Integral, and the Intereſt 12 *l. per* Day as required.

EXAMPLE III.

IF the Principal be 876000 *l.*
   Tabular, Number 876
    Here as the Principal is three Places extended beyond the Tabular Number, there is required three ‖ Places to be ſeparated to the Left-hand for the Intereſt, which is done

---

† Which is multiplying the Expreſſion of Intereſt by 10 and reverſely if a Tenth of 1|2 the Intereſt of 8760 *l.* be required, it will be |12. which is dividing the ſaid Expreſſion by 10. and will be the Intereſt of 876 *l. viz.* one Tenth of 8760 *l. &c.*
   * Which is multiplying 100
   ‖ Ditto   1000

by annexing o, to the Right-hand of 12. making 120 which is the Pounds *Sterling*, *per* Day, the Intereſt required, and in general ſo many Places as the Intergral given Principal extends beyond the Tabular Principal, ſo many Places muſt be cut off to the Left of the Tabular Intereſt for Integers, by annexing Cyphers to the Right-hand, when requiſite.

EXAMPLE IV.

WHAT is the Int of 987763 *l.* for a Day, at *5 per Cent. per Ann.*

Tabular Number　　　　949　　againſt it 13

which *per* laſt, is 130

The Remainder is　　　38763 *

Tabular Number　　　3869 againſt it,

53 which *per* Ex. 1. makes　　　　　　5|3

The Remainder is　　　　73　againſt

which is now only the Parts, *viz.*　　　　|01

　All added together make 135|31

† *viz.* 135 *l.* 6 *s.* 2 *d.* ½.

　* Bringing down the remaining Figures or Places of the given Principal.

　† See *p.* 13.

E X A M P L E V.

WHAT is the Intereſt for 22 Days at *5 per Cent. per Ann.* of 1·00000 *l.*

Tabular Number	949 gives 13	
Remainder, *&c.*	5100 †
Tabular Number	5037 gives	69
Remaind. in Part 1ſt	63 gives|008630||

The ſeveral Int. added tog. make 13|69863*

     Multiply by   22

       2739726
       2739726

viz. 301 *l.* 7 *s.* 4 *d.* ¾   —   301|36986

If there had been Shillings, *&c.* given with the 5 laſt Examples, the ſeveral Intereſts might have been found with Eaſe by the Rules a foregoing. But theſe great Principals are given for the Illuſtration of making the Table general, as they ſeldom (or never) happen in Buſineſs.

Hitherto the Intereſts have been all found at *5 per Cent.* the following Examples will clear up the Method of finding it for all Rates.

† See Page 21.
|| Here 8630 might have been plac'd after 69. (See Page 15.)
* The 0 is omitted. (See Page.)

RULE

RULE.

MULTIPLY the Intereſt found firſt at 5 *l. per Cent.* for a Day by double, the Rate required, next ſeparate from the Product one Place more for Parts than were before, ſuppoſing Cyphers prefix'd when requiſite, (*See Example* 1. *p.* 5.) which will then conſiſt of ſeven Places (excepting where the ſecond Part of the * Table is alone concern'd.)

EXAMPLE I.]

WHAT is the Intereſt of 44 *l.* at 1 ½ *per Cent. per Ann.* for a Day, againſt 44 *l.* is 6027 *l.* which multiply'd by 3, double the Rate, gives |0018081 here for illuſtration the two Cyphers, are prefix'd to make 7 Places, but it may be obſerv'd that when the laſt Place to the Right-hand is under 5, it may be omitted; when it is 5 or above, the Place before it or 6th to the Right-hand may be made one more, and only operate for ſix Places as in all the preceding Examples where the firſt Part of the Table has any Concern, (*ſee p.* 13, 14.)

* See *p.* 12, 13.

E X-

EXAMPLE II.

WHAT is the Interest of 6 *l.* for a Day at 2 ½ *per Cent. per Ann.* a-gainſt 6 is 822 which multiply'd by 5. the double Rate gives 4110 here three Cyphers muſt be ſuppos'd to make the Places 7. but 0 in the laſt Place to the Right-hand may be * omitted, working only for ſix Places in the Product, it may alſo be ob-ſerved, that 2 ½ *per Cent.* is half 5 and that 411 *l.* is likewiſe half the Intereſt taken out of the Table.

EXAMPLE III.

WHAT is the Intereſt of 60 *l.* for a Day at 2 *l. per Cent. per Annum.* againſt 60 *l.* is 8219 multiply'd by 4 gives 32876 for Anſwer, here omitting 6 the laſt Place to the Right-hand, and adding 1 to the 7 before it, you may operate with 3288 for ſix Places and purſuing this Method, you will have no Errors of Value in all the Operations, *&c.*

* *See* Note, p. 10.

EXAM-

EXAMPLE IV.

WHAT is the Intereſt of 6 *l.* for a Day at 2 ¼ *per Cent. per Ann.* Intereſt againſt 6*l.* is 822 double Rate 4 ½.

Multiply by   4
                 3288
½ Intereſt againſt 6   411
Intereſt required   3699 *
Or   370 ‖
Or   37 †

EXAMPLE V.

WHAT is the Intereſt of the laſt Example for a Day at 2 ⅛ *per Cent. &c.*

Intereſt as before   822   double Rate 4 ¼.
                4
              3288
⅛ Int. againſt 6   205 *
Anſwer.   3493 which will be 349 for 6 Places *per* foregoing.

* With three Cyphers ſuppos'd prefixt.
‖ For 6 Places.
† For 5 ditto. *See Note, p.* 10.
* The 5 might have been made one more, as it may always when the Remainder is Half, or above Half the Diviſor, which is done in this laſt Example.

EXAMPLE VI.

WHAT is the Interest of the last Example for a Day at 3 $\frac{7}{8}$ *per Cent. per Annum.*

Interest as before   822 and double Rate 7 $\frac{3}{4}$.

$$7$$

$$5754$$

$\frac{1}{2}$ Int. against 6   411
$\frac{1}{2}$ this again   206

6371 *viz.* 637. the Answer for 6 Places, *&c.*

In the preceding Examples, the fractional Parts of the Interests (for the double Rates) have been taken $\frac{1}{3}$, $\frac{1}{4}$, $\frac{3}{8}$ (scarce any other being in use) But in different Cases, or where the Tabular Interest is an odd Number, it will be as well to double the Tabular Interest at 5 *per Cent. &c.* (or take the Interest of double Principal) when multiplying by the Rate given still having Regard to 7 Places in the Product, *&c. (See p. 23.)* and operating as in other Respects *per* the foregoing, gives the Answer required.

EXAMPLE VII.

WHAT is the Interest of 7 *l.* for a Day at 1 *l.* and $\frac{1}{10}$ *per Cent. per Annum.*

Against

Againſt 7*l.* is 959 double thereof 1918

$\frac{1}{16}$ — 119 and 14 remaining, here the 9 may be made one more (*See p.* 25) when it will be 120, which added to 1918 makes 2038, and by *p.* 24. it will be 204 for 6 Places in the Product, the like with others.—But in the 2d Part of the Table as the Places of Intereſt are but two a Cypher muſt be put, or ſuppos'd prefixt to make them 1 more for 3 in the Product, (*See p.* 21) except againſt 7300*l.* where the Intereſt is Integral, which will then become the firſt Place of Parts, and only one Place required in the Product, but both theſe is when the double of the Rate to be reduc'd unto is only Pounds Sterling, otherwiſe it will be varied as in the foregoing ; which the enſuing Example will make eaſy.

E X A M P L E I.

WHAT is the Intereſt of 876*l.* for a Day at 1 *l. per Cent. per Annum.*
Againſt 876*l.* is 12 multiply'd by double Rate, *viz.* 2   2

(*See p.* 21.)*viz.* 5$d\frac{1}{4}$|024 *Anſwer* required, and 3 Places of Parts for the Product.

E X A M P L E II.
WHAT is the Intereſt of 1825*l.* for a Day at 1 *l. per Cent. per Annum.*

Against 1825 *l.* is   25 double the Rate 2·
     Multiply'd by   2
                    _____
Viz. 1 Shill. —— —— |050
which last 0, omit then 05   Answer required,
and 2 Places for the Product. (*See Note p.*10.)

EXAMPLE III.

WHAT is the Interest of 7300 *l.* for a
     Day at 1 *per Cent. per Annum.*
Against 7300 *l.* is   1 an Integral or 1 *l.*
     Multiply by   2 double Rate.
                    _____
Viz. 4 Shillings —— —— |2 *Answer.* With one
Place of Parts for the Product. (*See p.* 24.)

Here it may be obferv'd, if the Intereft of
a Tenth of 7300 *l.* be requir'd, *viz.* 730 *l.*
against it in the Table is ||10 Parts, and if the
intereft be at 5 *l. per Cent.* the Value (by *p.*
5.) will be 2 Shillings, the Tenth of 1 *l.* a-
gainst 7300 *l.*—— If the Intereft of an hun-
dredth Part of 7300 *l.* or Tenth of 730 *l.*
viz. 73 *l.* be required against it in the Table
is |01 Parts, which is the tenth Part of 2
Shillings, or hundredth Part of 1 *l.*—— From
whence it is very plain, that the Expreffion
for a tenth Part of 1 *l.* (the Intereft of 7300,
&c.) becomes |1 the firft Place of Parts to
the left Hand, (*See Note* * *p.* 18, 24.) and
for an hundredth Part thereof it becomes |01
the 1 being then in the fecond Place of Parts
with a Cypher prefixt for that Purpofe, *&c.*

EXAM-

E XAMPLE IV.

WHAT is the Intereſt of 949 *l.* for 47
Days at 3 *l.* ½ *per Cent. per Annum.*

Againſt 949 *l.* is   **13**   doubled   026 with 0 prefixt.
    Double Rate   7   Mult. by   3
Int. of a Day |091 &c.   078
                            13 *

                           |091 Int. for a Day.
                             47
                           637
                         364
                        4|277

Here as there was at firſt but three Places
of Parts for the Intereſt of a Day, ſo there
muſt now be no more in the Product, when
the Intereſt required will be 4 *l.* 5 *s.* 6 *d.* ½.

* Half of 026 the double Intereſt.

           E XAM-

EXAMPLE V.

WHAT is the Intereſt of the laſt at 4*l.*
  ¼ *per Cent. &c.*

Double, *&c.* is as before   026

                                4

                            104

         ¼ of 026   65 *

                         1105

                          47

                       7735

                       4420

Viz. 5*l.* 3 10½ nearly   5|1935

* Here after dividing 026 by 4, there remain'd 2, to which annexing a Cypher and dividing on it gave 5 for another Place of Parts, which then became 4, and requir'd ſo many to be cut off for Parts in the Product, And this (if the Quote does not terminate before) will be ſound neceſſary to be carried on to 6 Places but never more, (by adding a Cypher to each Remainder) when if the Remainder be Half or above Half the Diviſor, the laſt Place muſt be made an Unit more, otherwiſe not.

EXAM.

E X A M P L E VI.

WHAT is the Interest of the laſt at 5*l.*
  ⅟₁₆ *per Cent. per Annum.*

Double as before is |026   16) 026 (1625

                              5   100

          ⅟₁₆ of 026   130   40
                          16ₒ5   80

                         |131625

                           47

                         921375
                         526500
Viz. 6*l.* 3 8¾ nearly 6|186375 *Anſwer.*

E X A M P L E VII.

WHAT is the Intereſt of 73 *l.* for a Day
  at 1 *l. per Cent. per Annum.*

Againſt 73*l.* at 5*l. per Ct.* is 01 doubled &c. |002 *the Anſ.*
Againſt 1 ½ *perCt. per* the foregoing it will be |003
Againſt 1 ¼ ditto |0025
Againſt 1 ⅛ ditto |00225
Againſt 1 ⅟₁₆ ditto |002125
Making 3, 4, 5, and 6, Places for the Product reſpec-
tively, &c.

E X.

E X A M P L E   VIII.

WHAT is the Interest of 7300 *l.* for a
    Day at 6 *l.* ¼ *per Cent. per Annum.*
Againſt it is 1 which doub. is |2 and is firſt Pl.
                                                6   (of Parts.
                                            ⎯⎯⎯⎯
                                              1|2
¼ of 2 double Intereſt is   05 *
Viz. 1 *l.* 5   1|25

E X A M P L E   IX.

IF it be required for 6 and ⅟₁₆, Then |2
                                        6
                                    ⎯⎯⎯⎯
                                      1|2
And ⅟₁₆ of 2 will be found   0125
And the Intereſt 1 *l.* 4 *s.* 3 *d.* 1|2125

E X A M P L E   X.

WHAT is the Intereſt of 100000 *l.* for
      22 Days, at 3 *l. per Cent. per Annum.*
(*See Ex.* 5. *p.* 22.)

＊ For 4 in 2 is 0, but a Cypher annext it goes 5 in 20.

The

The Int. was found at *5 per Cent.* 13|69862|0

Doub. and a Pl. more cut off for Pts. 2|73,7ꞏ6

Multiply by 3 the Rate into 22 Day *viz.* 66

$$16435356$$
$$16438356$$

Viz. 108 *l.* 16 *s.* 5 *d.* ¼   180|821916

E X A M P L E XI.

W**HAT** is the Intereſt of 2156 *l.* 13 *s.* 4 *d.* for 61 Days at 6 *l.* ¼ *per Cent. per Ann.*

The Principal doubled is 4313 *l.* 6 *s.* 8 *d.* (*ſee p. 26.*)

The Int. of which for ſix Places is   59087

7 |||

4ⁿ3609

¼ Intereſt for a Day deduct —   14772

Rate 6 *l.* ¾   39⁸337

2393022

Viz. 24 *l.* 6 *s.* 7 *d. Anſ.* for 61 Days 24||329057

As the Rate is firſt to be multiply'd by 1, it is next multiply'd by 6, (as in Multiplication) and added thereto.

As multiplying by 13, 14, 15, 16, 17, 18, and 19, *&c.* in one Line (which is taught in moſt Books of Arithmetic) will agreeably ſhorten the Work, I ſhall here give the Method for thoſe who have not ſeen it, *&c.*

|| Which is ¼ too much, ¼ of the Intereſt of the Day is therefore taken from the Product.

After

After the firſt Figure in the Product is ſet down to the Multiplication of the ſecond Figure in the Multiplicand, (with the Carriage from the former if any) you muſt add the next Right-hand Figure, ſetting down for the Product as uſual, Proceeding ſo through the whole Multiplicand, to the Left-Hand of which it will be beſt for Beginners to ſuppoſe a Cypher for Conveniency, as will appear in the Examples.

EXAMPLE I.

WHAT is the Product of 3764 by 13 in one Line?

$$
\begin{array}{r}
3764 \\
13 \\
\hline
48932
\end{array}
$$

Here firſt 3 Times 4 is 12, *viz.* 2 and go 1; next 3 times 6 is 18 and 1 is 19, and 4 to the Right Hand is 23, *viz.* 3 and go 2. Again, 3 times 7 is 21 and 2 is 23. with 6 to the right Hand is 29, *viz.* 9 and go 2, alſo 3 times 3 is 9 and 2 is 11, with 7 to the right Hand is 18, *viz.* 8 and go 1. *Laſtly*, ſuppoſing 0, 3 times 0 is 0, and 1 that was carried is 1, and 3 in this Caſe to the right Hand is 4, which ſet down gives the Product as above the like with all others.

Here

Here it may be obferv'd, that the laft Carriage added to the laft left Hand Figure in the Multiplicand, gives the laft left Hand Figure &c. in the Product; whence the Suppofition of an o may be omitted.

625	4793
16	19
10000	91067

This may be done with 21, &c. to 29 taking in the double of the left Hand Figure in the Multiplicand; as alfo by 31, 42, and fo thro' the nine Digits, taking in the Treble, Quadruple, &c.

E X A M P L E S.

3764	4625	4793
23	34	46
86572	157250	220478

Or when the laft Place to the right Hand of the Multiplier is Unity, after fetting the faid laft Place (by 1) in the Product begin with the preceding Digit in the Multiplier taking in the next left Hand Place in the Multiplicand, and fo on: Thus 3764 by 31.* Firft, once 4 is 4; next, 3 times 4 is 12 and 7 is 19, that is 9 and go 1; then 3 times 7 is 21 and 6 is 27, that is 7 and go 2: Again, 3 times 6 is 18 and 2 is 20 and 3 is 23, that is 3 and go 2.

Laftly,

* Which put down on Paper.

Laſtly, 3 times 3 is 9 and 2 is 11, which ſet in the Product as it is the laſt, gives 113894 the Anſwer. (Example 11, *p.* 29. may be thus wrought.)

To abridge in multiplying by 101 and ſo to 109 included.

Multiply by the ſingle right Hand Digit, ſetting the Product two Places farther to the right Hand under the Multiplicand, which added thereto gives the Anſwer required.

Thus 3624 by 103 will be 3624
$$\begin{array}{r} 3624 \\ \underline{10872} \\ 373272 \end{array}$$

To abridge in multiplying by 110.
Multiply by 11 in one Line (*See p.* 34) annexing a Cypher to the laſt right hand Place of the Product.

E X A M P L E.

$$\begin{array}{r} 3624 \\ \underline{110} \\ 398640 \end{array}$$

To abridge in multiplying by 111, 112, to 119 included.

Multiply by the two laſt right Hand Places in one Line, ſetting the Product two Places to the right Hand of the Multiplicand, and adding as before.　　　　　　　E X A M-

EXAMPLE III.

3624   by 112
43488

405888

To abridge in multiplying by † 120, 121, and so to 199 included.

Multiply by the laſt right Hand Digit next by the two preceding in one Line, ſetting down as in other Multiplications.

EXAMPLE IV.

3624   by 128
128

28992
43488

463872

It ſometimes happens when Multipliers conſiſt of three or more Figures, that the two next preceding the Digit you at any time multiply by, is exactly diviſible by the ſaid Digit, in which Caſe after multiplying by that Digit multiply that Product by the Quote or Number of Times the ſaid two preceding Digits contain, the other which ſet down as in other Multiplications makes the Proceſs a Line leſs.

† This as by 110, *p.* 36.

E   EXAM-

EXAMPLE V.

LET   3624 be multiplied by 328

$$\begin{array}{r} 3624 \\ 8 \\ \hline 28992 \\ 115968 \\ \hline 1188672 \end{array}$$

which mult. by 4 as under

This may be done in any Part of any Multiplier when it so happens.

It might also have been done multiplying by 28 in one Line, and next by 3, &c.

To multiply by 101 to 109 inclusive in one Line.

In multiplying by the first Digit when you come to the Place of Hundreds in the Multiplicand add to that Product the Unit's Place of the said Multiplicand, when to the Place of Thousands add the Place of Tens, and so on successively with the next Place till finish'd, when it will be best for Beginners to suppose two Cyphers to the Left of the Multiplicand, (as one before *p.* 34.)

Let   3624 be multiplied by 103.

$$\begin{array}{r} 3624 \\ 103 \\ \hline 373272 \end{array}$$

Here first 3 times 4 is 12, *viz.* 2 and go 1. Secondly, 3 times 2 is 6 and 1 is 7. Thirdly,

Thirdly, 3 times 6 is 18 and 4 in the Unit's Place of the Multiplicand is 22, *viz.* 2 and go 2. Fourthly, 3 times 3 is 9 and 2 carry'd is 11, and 2 in the Place of Tens is 13, *viz.* 3 and go 1; next, 3 times 0 is 0, but 1 and 6 in the Place of Hundreds is 7. Lastly, 3 times 0 is 0, but 3 the last Figure in the Multiplicand being set down gives the Product as before.

To multiply by 111 to 200, &c. in one Line.

Multiply by the two last right Hand Places by *p.* 34. taking in the Multiplicand as *per* last.

Let 3624 be multiplied by 119.

119

431256 the like with others.

When the Place of Hundreds in the Multiplier is 2, 3, &c. you must take in twice, three times, &c. the proper Figures in the Multiplicand, by which means you may multiply by any three Figures.

From hence may be deduc'd the Method of multiplying by many more Figures in one Line; but when the Digits run high, even in three Figures, it is apt to crowd and load the Memory; when ever this happens it ceases to be useful, and of no other Advantage than saving a little Paper: Therefore,

E 2

tho

tho' by some one of the foregoing Contractions (as shall be found convenient) a Line more, &c. may be introduc'd; yet it will be found less irksome, more certain, and upon the Whole more expeditious.

The Method of valuing for Farthings (*See p. 5.*) is not the exact, (though near enough for Practice) but those who would be quite so may make use of the following Method, *viz.* multiply the Expression to the first Place for Farthings included by 4, setting the Product under two Places farther to the right Hand, next subtracting it therefrom gives the exact Answer required.

EXAMPLE I.

TAke the Expression for Farthings to Example viii. *p.* 12, *viz.*   29942 †

$$\frac{119768}{2874432}$$

Here the true Value is 28 Farthings, 7 Tenths, or 74 Hundredths, or 744 Thousandths, or 7443 Ten Thousandths, or 74432 Hundred Thousandth Parts of a Farthing, which last subtracted from a Hundred Thousand, *viz.* 100000

$$\frac{74432}{}$$

Gives ———   25568 so that the Value * estimated

mated

---

† When the   Skillings are valued.   * In Page 12.

mated is not three Tenths of a Farthing too much, which is inconfiderable.

EXAMPLE II.

TAKE the Expreffion for Farthings to Example ix. *p.* 32, *viz.* ——   125

500
————
Here they are juft 12 as eftimated   12000

EXAMPLE III.

TAKE the Expreffion againft 73 in the fecond Part of the Table, *viz.* |01 here a Cypher put to the right Hand (*See p.* 13.) it becomes 10 for Farthings, or 2 *d.* $\frac{1}{2}$, which is not exact, a proportional Part of 10, *viz.* 25th Part thereof requiring to be deducted, proceed therefore as in *p.* 40, (*viz.*)

010

40 Product by 4
————
00960 gives 9 Farthings and 6 Tenths of a Farthing, the true Anfwer required, the former Value being 4 Tenths of a Farthing too mnch.

Againft 365 is |05, which is juft 5 times that againft 73 taken out as before, which |05 is in Value one Shilling or 48 Farthings; (*See p.* 6.) therefore multiplying 0096 found as above by 5, it gives 048, *viz.* 48 Farthings or one Shilling as before. It may

likewife

likewife be obferv'd, that as |05 expreffes the Intereft of 365 *l.* for one Day, fo it does alfo the Intereft of 1 *l.* for 365 Days, or a Year, and in Part firft 9041 with two Cyphers fuppos'd prefixt is the Intereft of 1 *l.* for 66 Days, as well as of 66 *l.* for one Day the like with the reft.

To find the Parts that fhall exprefs the Value of Shillings, Pence and Farthings.

It is very eafy for Shillings, which if even Half the Number will be the firft Place of the Parts to the left Hand. Thus if 4 be the Shillings given, 2 will be the firft Place of Parts. See *Ex.* iii. *p.* 28, and Obfervation thereon.

If the Shillings be odd annex or fuppofe a Cypher to the right Hand, Half of which will be the Expreffion required.

Thus if the Shillings be 7, annexing a Cypher it gives 70, the Half of which is 35, for Anfwer, fee *p.* 5. *Ex.* i. the like with all others.

Hence 05 is the Expreffion for one Shilling as againft 365 in the fecond Part of the Table (*See p.* 41.) for *per* the Rule a Cypher annext to 1 makes 10, when the Half of 1 is 0, and of 10, 5, *viz.* 05, &c.

For Pence and Farthings.

Reduce the Pence to Farthings, and add the other Farthings if any thereto; next mul-
ply

ply by 4, adding as you multiply a * fixth Part of the faid Farths. fetting the Product under them two Places farther to the right Hand, their Sum gives the Expreffion required; obferving, that when the Farthings confift but of one Place as 9, or under, two Cyphers muft be prefixt thereto, but when of two Places (which is the moft) one Cypher only.

When the Farthings are exactly divifible by 6, this will be the true Anfwer; and otherwife fo extreamly near, as to be fufficient for almoft any Purpofe. But to be quite nice; add to the Remainder in taking the 6th Part of the Farthings an o, &c. (See Ex. 5. p. 30.) and divide by 6, fetting the Quote to the right Hand of the Expreffion found as before, which will then be the true Anfwer required.

EXAMPLE I.

WHAT is the Expreffion for 3 *d.* or 12 Farthings.———Firft, 4 times 2 is 8 and 2 for the 6th Part of the Farthings is 10, *viz.* 0 and go 1; next 4 times 1 is 4 and 1 is 5, which Product 50 placed after 12, as it is *per* the Rule, to be fet two Places to

the

---

* If the Remainder be 3 or upward make the Quote one more, otherwife not.

the right Hand, gives with the * Cypher prefixt 01250 which laſt Cypher to the right Hand omitted, gives the true Expreſſion 0125 required.

EXAMPLE II.

WHAT is the Expreſſion for 7 *d.* ⅕, or 30 Farthings.

 125 Product by 4, &c.
 ‾‾‾‾‾‾
|03125 Expreſſion required.

Theſe Expreſſions are the true, as nothing remained in taking the 6th Part of the Farthings.

EXAMPLE III.

WHAT is the Expreſſion for 4 *d.* or 16 Farthings. 16

 67
 ‾‾‾‾‾
|01667 Anſwer.

Here as 4 remained, the laſt Place to the right Hand in the Prod. by 4 is made one more.

* See *Page* 43.

EXAMPLE IV.

WHAT is the Expreſſion for 2 *d*. or
8 Farthings.

$$\frac{33}{|00833}$$ Anſwer.

Here the Remainder 2 after taking the 6th
Part of the Farthings, gives *per* the Rule no
Augmentation for the Product.

Theſe two laſt Examples being not the
preciſe or exact Expreſſions, it will be the
beſt here to repeat the Work; obſerving the
Rule for obtaining them:

Thus (*Ex.* iii) — |016
66 mult. by 4, *&c.*
|01666 firſt Expreſſion.

Next as 4 remained in taking a 6th Part of
the Farthings, by annexing o to the right
Hand thereof it becomes 40, and dividing
by 6, it gives 6 to be annext to the right
Hand of the Expreſſion above found; and
ſo proceeding on there will be a continual Re-
petition of 6; when this happens (as alſo
with any other Digit) make a Dot over the
firſt of them to the left Hand to diſtinguiſh
it for that Purpoſe,

When.

When the same will be contracted to |o1$\dot{6}$
And the other to ——— |oo8$\dot{3}$

Which Dots shew they may be continued on at Pleasure, and are the true Expressions.

The Rule for working with these repeating Digits is very easy, *viz.* When multiply'd by any other Digit you must add so many Units to that Product as are the Number of Nines in it, setting down the Digit dotted arising from this, as in the Product of other Multiplications.

EXAMPLE V.

$\mathbf{W}$HAT is the Value of the Expression for Farthings, *viz.* o1$\dot{6}$ as above.

Thus |o1$\dot{6}$ *
          6$\dot{6}$ †
      ———————
      |o16

* Multiplying by 4, &c. setting the Product by Rule, *Page* 33.

† Here as 6 in the Expression repeats it is to be continued out, or suppos'd so, till even with the under repeating 6, when subtracting the Repetition will be taken off, leaving 16 Farthings as at first.

For

For a farther Proof hereof let |o1ȯ   be
multiply'd by 365   365
                                 ──────
                                      83
                                    100
                                     50
                                 ──────
                                   6|083

Here as there are three Places in the Ex-
preffion, there muſt be three in the Product,
and the Value *per* Rule aforegoing, will be
6*l.* 1*s*, and 33 for Farths next |33

                            133 mult. 4.
                         ──────
Making the Anſ. 6*l.* 1*s.* 8*d.*   32 remaining
Farthings or 8 *d.*

For as the 16 Farthings at firſt is 4 *d.*
therefore 365 Groats is 121 Shillings and 8,
or 6*l.* 1 *s.* 8 *d,* as before.

EXAMPLE VI.

AGAIN let the fame Expreffion, *viz.* |o1ȯ
   be multiply'd by 241.   241
                                     ──────
                                        16
                                       666
                                      3333
                                     ──────
                                    4|o1ȯ

Here

Here as the dotted Figures in the several Products repeat—they are all except the firſt continued out till made even with the ſaid . . Firſt——————next adding up that Line there is an Unit added to the Sum for the nine contained therein, making it 16, when ſetting down the 6 dotted, as it will repeat the true Product will be found as above, *viz.* 4*l.* and the Expreſſion |016 to be 4*d.* which is plain, it being the ſame as at firſt, *&c.*

EXAMPLE VI.

LET the Expreſſion |0083 be multiply'd by 241.

$$
\begin{array}{r}
241 \\
\hline
8\dot{3} \\
\dot{3}33 \\
166 \\
\hline
2|008\dot{3} \\
\dot{3}33 \text{ mult. } 4 \text{ } \&c. \\
\hline
008 \ldots \textit{viz.} 8 \text{ Far-}
\end{array}
$$

things or 2*d.*

True Product 2*l.* 0*s.* 2*d.* the Half of the above, *&c.*

Here the dotted Digits in the ſeveral Products are not produc'd but ſuppos'd, which is very eaſy.

In

In finding the Expreſſion for Pence and Farthings, no other Digit will be found to repeat but 3, or 6; whence theſe Examples are ſufficient on that Head.

E X A M P L E VIII.

WHAT is the Expreſſion for 9 *d.* $\frac{3}{4}$, or 39 Farthings.

$$\frac{162 \text{ by } 4, \&c.}{|040625}$$

Here as 3 remained, by adding an 0 and dividing by 6 it gave 5, which annexing to the right Hand, gives 040625 the true Expreſſion as nothing remained afterwards; which let be prov'd back for its Value in Farthings,

Viz.

$$\frac{\begin{array}{r}040625\\162500\end{array}}{|039\ldots \text{ Farthings as before.}}$$

Thus from what has been ſaid, the true Expreſſions at any time may be found, as it were by Inſpection, and any Number of thoſe Places may be taken at Pleaſure, as the Nature of the Caſe requires.

F

E X A M P L E IX.

WHAT is the Expreſſion for 16 Shillings and 2 *d* $\frac{1}{4}$.

For 16*s. per* foregoing, it is |8 *
For 9 Farthings *ditto*   009375
                          |809375 Anſ.

E X A M P L E X.

WHAT is the Expreſ. for 17*s.* 11*d.*
    For 17*s.* it is   — |85
For 11*d.*   ————— |04583
                          |89583 Anſ.

E X A M P L E XI.

WHAT is the Expreſ. for 1*s.* & $\frac{1}{4}$.
    For 1*s.* it is   - |05
For $\frac{1}{4}$ *ditto*   — |0010416
                          |0510416 Anſ.

Thus with extreme Eaſe may the true Expreſſions be found in all Caſes.

And each of them in moſt Caſes may be contracted. For in theſe Examples 8094, or 81 may be taken for the firſt, 8958, or 896

                                                for

* The 1ſt Place to the left Hand.

for the second; and 051 for the laſt, and that without any ſignificant Error.

If theſe are valued by the common Rule of bating 1 for every 25, &c. then 051 will be 49 Farthings, or 1 s. & $\frac{1}{4}$, and 8958 will be 17 s, and by the * Rule the Remainder muſt be taken 46, and bating 2 becomes 44 Far-things, &c.

Any yearly Sum given to find *per* Table, what that is *per* Day.

If it be under 73 *l.* take out the Intereſt of double the Sum (or double the Intereſt of the Sum) next cut off or ſeparate from the Parts the laſt left Hand Place, the remaining Fi-gures to the right Hand expreſs the Value of the Money.

E X A M P L E I.

A^T 54 *l.* 15 s. *per Ann.* what is that *per* Day.

Double *ditto*	109 *l.*	10		
Next leſs in Tab.	73		againſt it	01.
remaining	36	10 *ditto*		005 ‡
				0|15 ‖

F 2   EX-

---

‡ Which might at firſt have been placed after 01.
See p. 14. ‖ Sum with the left Hand place ſeparated, *viz.* Three Shillings.

E X A M P L E II.

A T 45 *l. per Ann.* what is that *per* Day.

Double *ditto* is 90 *l.* and the Intereſt, *&c. per* foregoing 0|12329 *viz.* 2 *s.* 5 *d.* ½, *&c.*

 If you would be more exact as to the Parts of a Farthing, multiply the Expreſſion for Farthings, as directed in *p.* 40.

Viz.   2329..
      9316
       ‾‾‾‾‾‾‾
Farthings   22|3584

Which is 22 Farthings, 3 Tenths, or 35 Hundredths; or in the Whole 3584 Ten Thouſandth Parts of a Farthing more *per* Day than 2 *s.* 5 *d.* ½. If the ſaid Parts of a Farthing be multiply'd by 365.

Viz.   —   3584
         365
       ‾‾‾‾‾‾‾‾
        17920
       21504
      10752
      ‾‾‾‾‾‾‾‾
    * 130|8160

If

* That is 130 Farthings, or 2 *s.* 8 *d.* more in the Year, which may be eaſily proved.

If the same be required for any Number of Days of the Year, suppose 137 multiplying the Expression for one Day thereby gives the Answer required,

Thus
$$
\begin{array}{r}
|12329 \\
137 \\
\hline
86303 \\
160277 \\
\hline
16|89073
\end{array}
$$

*

If the said Expression for a Day be multiplied by 365 it will produce 45 the Pounds *per Annum.*

Thus.
$$
\begin{array}{r}
12329 \\
365 \\
\hline
61645 \\
73974 \\
36987 \\
\hline
45|00085
\end{array}
$$

45|00085   The last 85 to the right Hand is here of no Value, the first Expression being not quite perfect, though near enough in all Reason.

From whence it may likewise be observ'd, that |12329 is also the Expression for 45 Days of a Year: So that taking at any Time the Days of a Year as *1s.* and proceeding accordingly,

F 3   cordingly,

cordingly; you will have the Expreſſion for the ſaid Number of Days required.

* If the yearly Sum be 73 *l*. or upward: Take out the Intereſt of the ſaid Sum from the Table, next double the ſaid Intereſt proceeding in other Reſpects as before.

EXAMPLE III.

AT 744 *l*. 16 *s*. 9 *d*. *per Annum*, What is that *per* Day.

The Int. from Tab. will be found   102033
Multiply by   2
Viz. 2 *l*. 0 *s*. 9 *d*. ¾ *per* Day   2|04066

EXAMPLE IV.

AT 4088 *l*. 8 *s*. 7 *d*. *per Annum*, What is that *per* Day.

Intereſt, *&c*. will be found   560058
2
Double   1|120116

But *per* the Rule when the laſt left Hand Place of Parts is ſeparated it will become 11|20116, *viz.* 11 *l*. 4 *s*. 0 ¼. *per* Day.

E X-

---

* Though this may be done by the foregoing Method, and that by this, yet each as us'd, will be found to have its Conveniency.

EXAMPLE V.

AT 7300*l. per Annum*, What is that *per* Day.

The Interest is 1, an Integer, which doubled is 2 ; next feeing there are no Places of Parts, * Cyphers must be fuppofed to the right Hand, and one feparated to the left when it will become 20, *viz.* 20 *l. per Diem.* See Ex. 3. *p.* 20.

If the Annuity be more than 7300 *l.* the greatest in the Table, divide the faid Annuity thereby, when the Quote will be fo many times 20 *l.* next feek for the Remainder by Rules aforegoing.

EXAMPLE VI.

AT 44327 *l.* 14 *s.* 9 *d. per Annum*, What is that *per* Day.

The Pounds divided by 7300 gives 6 for the Quote, and 527 *l.* 14 9 Remainder, the Interest for which doubled will be found 1|44586, which added to 120 (*viz.* 6 times 20) gives 121 *l.* 8 *s.* 11 *d.* Answer the like with all others.

Any daily Sum, given to find what that is *per Annum.*

Find the Expreffion for half the given Sum;

---

* See *Ex.* 3d. *p.* 20.

Sum; (*See p.* 42.) (or for the Whole, and take the Half, but the firſt is generally moſt convenient) next prefix a Cypher to the left Hand thereof, the Principal anſwering to this in the Table gives the Anſwer.

EXAMPLE I.

AT 3 *s. per* Day, What is that *per Annum.*

The Expreſſion for 1 *s.* 6 *d.* (*See p.* 35) is 075, and a Cypher prefixt by the Precept is 0075, which muſt be ſought for among the Intereſts in that Part of the Table, where two Cyphers are ſuppos'd prefixt, which falls in the laſt Column of Part the firſt.

Thus Expreſ. 1ſt found is 0075 .. ‖
$$* \quad 7397 \; \dagger$$
Remainder 000103 ‡
Making for Anſwer 54 *l.* 15 *s.*

‖ Two Cyphers ſuppoſed for ſix Places.
* Next leſs in Table (with two Cyphers ſuppos'd.
† And againſt it 54 *l.* 0 0 Principal.
‡ Ditto - - 103 15 0

E X A M P L E II.

AT 17 *s.* 9 *d.* *per* Day, What is that *per* Annum.

Exp. for 8 *s.* 10 *d.* ½ *&c.* is |044375
In 2d Part Tab. againſt |04 · · · · is 292 *l.*
          Rem. |004375
Int. *dit.* with 2 Cyph. ſup. 4247 is 31 *l.* 0
         Rem.   **1**28
Ditto 3 Cyph. ſup.   123 is   18 *s.*
                *5

Making the Anſwer 323 *l.* 18 *s.* 9 *d.*

E X A M P L E III.

THE Expreſſion *per* Day for 45 *l.* *per* Annum found as before was † |12329 the Half ordered by the ‡ Rule will be 006164, againſt which in the Table, Part I, where two Cyphers are ſuppos'd is 45, which proves the Rule.

    Hence it is obvious as |12329 was alſo the Expreſſion for 45 Days of a Year. That any other Expreſſion ordered *per* the Rule, the Number of Days anſwering thereto may likewiſe be found, it being the ſame with the Pounds.   If

 * And againſt 5, *viz.* 3 and 2 are 5 *d.* and 4 *d.* *viz.* 9 *d.*
 † See p. 52.
 ‡ See p. 55, 56.

If Half the daily Sum confifts of Pounds, Shillings, &c. find the Expreffion for the Shillings, &c. next inftead of prefixing a Cypher thereto, feperate the Units Place of half the Sum from the Pounds to the Parts, which will then be the Expreffion required, (and is the Converfe to Exp. 4. *p.* 54.)

E X A M P L E IV.

AT 2 *l.* 4 0 *per* Day, What is that *per Annum.*

The Half is 1 *l.* 2, and the Expreffion for 2 *s.* is |1 next (inftead of a Cypher) prefixing the 1 *l.* it becomes |1 1. Againft which in Table, Part II. Anfwer 803 *l.* and is fo much *per Annum.*

E X-

EXAMPLE V.

AT 3*l*. 13*s*. 6*d*. *per* Day, what is that
per Annum.
  The Half is 1*l*. 16*s*. 9*d*. the Expreſſion
for which is |8375.

And the 1 prefixt makes |18375
In the Tab. againſt   18 ... is 1314*l*.
              Remainder ..375
In Tab. againſt ————   3699 is 27*l*.
              Remainder   51
In Tab. againſt ————   48 is   7*s*.
              Remainder   *3
againſt 2 & 1.*viz.* 3 the Rem. is 4*d* & 2*d viz.* 6*d*
              Anſwer   1341 *l* 7*s* 6*d*

* See p. 11.

EXAMPLE VI.

AT 21 *l.* 5 0 *per* Day, What is that *per Annum*.

The Half is 10 *l.* 12 6, the Expreſſion for 12 *s.* 6 *d.* is 625, to which as the Units Place of half the Sum, *viz.* 10 *l.* is poſſeſt by an 0, the ſame muſt be prefixt,

Making   -   1|0625

          † 1 .... is 7300 *l.*

          Remainder 0625

In Tab. againſt ——— 06.. is   438 0 0

          Remainder ..25

In Tab. againſt ——— ..2466 is 18 0 0

In Tab. againſt ——— .... 34 is   0 5 0

Making the Anſwer   7756 5 0

If the daily Sum be great, it may be done *per* the Converſe to Example 6. *p.* 55, ſuppoſe 154 *l. per* Day, which ordered will be 7|7. Then 7 times 7300 is 51100, and againſt 7 is 5110, making 56210 *l.* Anſwer. By a little Application all this will be very familiar, and done as it were at Sight.

The foregoing Examples amply explain the Uſe of the Table, in finding at all Rates the Intereſt of any Principal for Days. But
for

† Next in the Table againſt 1, which is here Integral.

for entire Years, the following Examples exhibit a very easy and concise Method.

RULE.

WHEN the Principal consists of two or more Integral Places, multiply the same by the † Rate, and this Product by the Number of Years; next seperate from this last Product two Integral Places to the right Hand for Parts, which gives the Answer required.

EXAMPLE I.

WHAT is the Interest of 148 *l.* for 3 Years at 5 *per Cent. per Annum.*

$$
\begin{array}{r}
148 \\
5 \\
\hline
740 \\
3 \\
\hline
22|20 \; *
\end{array}
$$

Or the two integral Places may be seperated from the Principals at first for Parts, when multiplying by the Rule the Product will be the Answer, with two Places of Parts therein as before.

G   E X-

† Which for Illustration is first taken Integral.
* Which is dividing by 100.   See *P.* 28.

E X A M P L E VI.

AT 21 *l*. 5 0 *per* Day, What is that *per Annum*.

The Half is 10 *l*. 12 6, the Expreſſion for 12 *s*. 6 *d*. is 625, to which as the Units Place of half the Sum, *viz*. 10 *l*. is poſſeſt by an 0, the ſame muſt be prefixt,

Making   -   1|0625

† 1 .... is 7300 *l*.

Remainder 0625

In Tab. againſt ——— 06 .. is   438 0 0

Remainder ..25

In Tab. againſt ——— ..2466 is   18 0 0

In Tab. againſt ——— .... 34 is   0 5 0

Making the Anſwer   7756 5 0

If the daily Sum be great, it may be done *per* the Converſe to Example 6. *p*. 55, ſuppoſe 154 *l*. *per* Day, which ordered will be 7|7, Then 7 times 7300 is 51100, and againſt 7 is 5110, making 56210 *l*. Anſwer. By a little Application all this will be very familiar, and done as it were at Sight.

The foregoing Examples amply explain the Uſe of the Table, in finding at all Rates the Intereſt of any Principal for Days. But
for

† Next in the Table againſt 1, which is here Integral.

for entire Years, the following Examples exhibit a very eafy and concife Method.

R U L E.

WHEN the Principal confifts of two or more Integral Places, multiply the fame by the † Rate, and this Product by the Number of Years; next feperate from this laft Product two Integral Places to the right Hand for Parts, which gives the Anfwer required.

E X A M P L E   I.

WHAT is the Intereft of 148 *l.* for 3 Years at 5 *per Cent. per Annum.*

$$
\begin{array}{r}
148 \\
5 \\
\hline
740 \\
3 \\
\hline
22|20 \; *
\end{array}
$$

Or the two integral Places may be feperated from the Principals at firft for Parts, when multiplying by the Rule the Product will be the Anfwer, with two Places of Parts therein as before.

G   E X-

---

† Which for Illuftration is firft taken Integral.
* Which is dividing by 100.   See *P.* 28.

EXAMPLE II.

Thus   —   1|48 †

            15 *

          —————

         22|20

When the Principal confifts but of two
Integral Places, they may be both feperated
at firft for Parts, which multiply'd by the
Rate and Time as before, they will be two
Places for Parts in the Product.

EXAMPLE III.

WHAT is the Intereft of 10 *l.* for a
    Year at 1 *l. per Cent. per Annum.*
Which is if 100 *l.* give 1 *l.* Intereft for a
Year, what will 10 *l.* give. Which order'd
accordingly, it will be |10 Parts or 2 Shil-
lings. See *p.* 5.
When the Principal confifts but of one In-
tegral Place prefix a Cypher thereto, and fe-
perate both for Parts, &c.

EXAMPLE IV.

WHAT is the Intereft of 1 *l.* for a Year
    at 1 *l. per Cent. per Annum.*
Which will become |01 Parts. See Obfer-
                      vation,

† Which is the Intereft for one Year at 1 *l. per Cent.*
* Which is the Product of the Rate into the Time, and
then multiplied in one Line. *See p.* 34.

vation, *p.* 28, and may be valued *p.* 40.

When the Principal confifts of no Integral Places but all Parts prefix two Cyphers thereto, and feparate all for Parts.

E X A M P L E V.

WHAT is the Intersft of 12 *s.* and 6 *d.* for a Year at 1 *l. per Cent. per Annum.*

The Expreffion for 12 *s.* 6 *d.* is |625, which will become |00625, *viz.* 1 *d.* $\frac{1}{2}$. (See *p.* 42.)

It is obvious in thefe four laft Examples that the Principal is divided by 100 to give the Number of Parts for the Product, and that it would have been equally the fame if the Product at laft had been divided by 100 ; from whence may be eafily feen the Reafon of the following general

R U L E.

MUltiply the Principal, Rate and Time as *per* Rule the firft ; next feparate two Places more for Parts in the Product than are in the faid Principal, Rate and Time, prefixing Cyphers to the Product when deficient, which will then be the true Anfwer required.

E X-

E X A M P L E VII.

WHAT is the Interest of 13 *s.* and 4 *d.* for a Year at 5 *per Cent. per Annum.*

$$|\overset{.}{6} \;*$$
$$\underline{\;\;5\;\; \text{Rate}}$$
$$|0\overset{.}{3}3 \text{ or } 8d. \text{ See } p.47.$$

Here as there was but one Place of Parts in the Principal there required three in the Product, but as there was but two by the Multiplication a Cypher was prefix'd according to the Rule.

E X A M P L E VIII.

WHAT is the Interest of one Shilling for a Year at 2 *l. per Cent. per Ann.*

Expref. for a Shil. is $\quad |05$
$$\underline{\qquad\quad 2 \text{ Rate}}$$
$$|0010 \text{ } viz. \text{ } \tfrac{1}{4} \text{ nearly.}$$

Here as there was two Places of Parts in the Principal there required four in the Product, and two Cyphers prefixt according to the Rule.

E X-

* The Expreffion for 13 *s.* 4 *d.* (*See p.* 42. and *Ex.* III. *p.* 44, alfo *p.* 46.)

EXAMPLE IX.

WHAT is the Interest of 282 *l.* 13 *s.* 3*d.* for 6 Years at 3 *l.* 10 *d. per Cent. per Annum.*

Principal   282|6625
Rate   3|5
             14133125
             8479875
             98931875
Years   6
          59|3591250 *viz.* 59*l.* 7*s.* 2*d.* $\frac{1}{4}$.

Here as there are 5 Places of Parts in the Principal and Rate, there are required seven in the Product, which is separated accordingly.

But as the Rate into the Time gives 21 an Integral, the said Principal might have been multiply'd thereby in one Lines.

Thus   282|6625
              21 *
          59|359125

Or ‖ two Integral Places might have been separated at first for Parts to the Four, which would have then been six for the Product.

              G 3   E X-

---

* See *p.* 35, and Example II. *p.* 62.
‖ See *p.* 61.

EXAMPLE X.

WHAT is the Intereſt of 231 *l.* 13 *s.* 6 *d.* ¾ at 4 *l.* 1 *s.* 3 *d. per Cent. per Annum* for 5 Years.

```
Principal        231|678125
   Rate                4|0625
               ─────────────
                 1158390625
                  463356250
                 1390068750
                  926712500
               ─────────────
                9411923828125
Numb. Years              5
               ─────────────
           4.|059619140625   Viz.  47 l.
1 s. 2 d. ¼ Anſwer.
```

Here as there are ſix Places in the Principal, and four in the Rate, *viz.* Ten, there are Twelve ſeparated in the Product, according to the Rule the like with all others.

But theſe Multiplications by all the Figures being very tedious; and as no more than four Places are ever neceſſary in the Product for ſecuring the Value of the Money.

I ſhall next inſert the Rule for that Purpoſe, which will greatly ſhorten and make eaſy the Work.

After two Places are ſeparated from the Principal for Parts (to the reſt if any) as before

fore * fhewn, fet the Figure in the Units Place of the Rate under the † fourth Place of Parts in the Product by the Time ; inverting every other Place of the Rate on the right Hand to the left, and on the left Hand to the right, when multiply as ufual, beginning with that Place in the Principal, which is directly over the laft right Hand Place of the inverted Rate taking in the Carriage of the next Digit (or two) to the right Hand, fet the firft Digit (or o) arifing from this directly under the fame, proceeding after as in other Multiplication.

Obferve the fame with the next multiplying Digit, beginning alfo at the Place directly over it, having Regard to the Carriage as before, the Digit (or o) here muft be fet directly under the laft to the right Hand of the former Product, proceeding on as ufual.

This Method being obferv'd throughout ; the Addition of the feveral Products, will be that with four Places of Parts required. Obferving in thefe Cafes, firft to multiply the Principal fo ordered by the Time as follows. Take the laft Example.

---

* *P.* 62.
† If it be required for three Places, it muft be put under the third, the like for any other Number.

Principal, &c.   2|31678125
Time ——— ——   5
                                  ———————————
                                  11|58390625*
Rate inverted ———   5|2604
                                  ———————————
                                    463356
                                      6950
                                       232
                                        58
                                  ———————————
Viz. 47 *l.* 1 *s.* 2 *d.* ¼ as before   47|0596

Here in multiplying 8 by 6, the Carriage
from the two right Hand Digits was 2, which
made 50, &c.

Next by 2 the Carriage was 1 and above
6 Parts, but when it is 5 or upward, the
Carriage may be made one more, which is
therefore taken 2, and the rather, as there
was fome Defect in the Carriage before by 6.

In multiplying by 5, the Carriage was
fo extremely near 3, that it was taken as fuch.

This alternately obferved, there will fel-
dom or never be an Error in the fourth Place
of Parts from that wrought at large, and if
by

* Here it may be feen, that there was no Occafion
of multiplying all the Figures of the Principal by the
Time, but to have begun only at the fifth Place; the
like of others with regard to the Carriage of the fixth.

by Chance it fhould err an Uuit, 'twill be of
no Signification.

By this Method may the Interefts by the
Number of Days in the firft Part of the Ta-
ble, be greatly abridged in contracting for
three Places, which will always be within half
a Farthing.

Take *Example* I. *p.* 5. *viz.*   959
                                    563
                                   ─────
                                    288
                                     57
                                      5
                                   ─────
                                   |350

Here you muft obferve, that as there are 3
Cyphers, fuppofed before 959, 5 in the Units
Place of the Multiplier, is put under the 3d
fuppos'd Cypher, and the two other (Integral)
Digits inverted to the right Hand, as *per* the
Rule, *p.* 67.

Next in the multiplying by 3, the Carriage
was taken a little too much ; by 6, too little,
and laftly, by 5 fomewhat too much, all
which is very obvious, fo that the Defect in
the Product will be always infignificant.

                                        Take

Take *Example* V. *p*. 8. *viz*. 3562
782
———
712
285
25
———
1|022

By this Method may all the *Examples* be done, and to four Places, if three fhould not be thought fufficient, *&c.*

If at any Time the Rate of Intereft fhould confift only of Parts, as it will when it is under 1 *l. Sterling.*

You muft Place a Cypher under that Place of Parts in the Product of the Principal into the Time, as you intend the Number of Places in the Product by the Rate ; next invert, all to the left, and multiply as before.

Again, What is the Intereft of the laft *Example p.* 68. for the fame Time at 2 *s*. 6 *d. per Cent.* with three Places of Parts in the Product or Anfwer.

Principal, *&c.* as before   11|5839
521|0
———
1158
232
58
———
Viz. 1 *l*. 8 *s*. 11 *d*. ½   1|448

Of

Of DISCOMPT.

THE cuſtomary Method (eſpecially for Days) is to find the Intereſt of the Principal for the given Time, and to deduct it from the ſaid Principal for the preſent Worth.

But the true Rule is to add to 1 *l.* its Intereſt for the given Time, when it will be as the Sum of the ſaid 1 *l.* and its Intereſt is to 1 *l.* ſo is the given Principal to its preſent Worth. Dividing therefore any Principal by the Sum of 1 *l.* and its Intereſt for the given Time, the Quote will be the preſent Worth required.

LEMMA.

IF two Numbers be multiplied by any Number, the Products divided one by the other, will give a Quotient equal to that of the two Numbers divided reſpectively one by the other.

Suppoſe 2 and 6, which let be multiplied by 10, the Products 20 and 60 divided as aforeſaid, the Quote 3, will be equal to 6 divided by 2, the like with any other Number, &c.

EXAM-

E X A M P L E I.

WHAT is the prefent Worth of 100 *l.* due a Year hence at 5 *l. per Cent. per Annum?*

The Intereft of 1 *l.* for a Year (*fee p.* 42.) is |05, which added to 1, gives 1|05.

Thus ftated 1|05) 100 (But when the Divifor has Parts, and the Dividend is a whole Number, by annexing fo many Cyphers to the right Hand of the Dividend, as there are Parts in the Divifor, (which is here multiplying both by 100, (*fee Note, p.* 20. and the above *Lemma,*) you muft then divide as in the whole Numbers, when the Quote will be fo far Integral (with Parts if divided farther on, *fee p.* 30, 31.) and give the Anfwer required.

Thus * 105) 10000 (95|23ε *viz.* 95 *l.* 4 *s.* 9 *d.* $\frac{1}{4}$
     550   [nearly.
      250
      400
       850
      (10)

The Product of each Figure of the Divifor, with that of the Quotient, is taken from the Dividend (borrowing fo many tens as are requifite)

---

* From whence you have alfo this Proportion, *viz.* As 100 *l.* with its Intereft for the given Time is to 100, fo is any Principal to its prefent Worth.

requisite) and the Remainder at the same Time only set down. Thus 9 times 5, *viz.* 45 from 50, the Remainder 5 is set down ; next 9 times 0 is 0, with 5 that was borrowed is 5, from 10 leaves 5, which is also set down ; lastly, 9 times 1 is 9, and 1 that was borrowed is 10, from 10 leaves no Remainder, the like with others.

But when the Principal and Divisor both consist of Parts, you must separate so many from the Principal to the left Hand, as there are in the said Divisor, when if the Parts in the said Principal falls short, you must annex a * Cypher or Cyphers as in *Example* I.

EXAMPLE II.

WHAT is the present Worth of 144 *l.* 17 *s.* 7 *d.* due a Year hence at 5 *l. per Cent. per Annum.*

First Station 1|05)144|87916
Second *ditto* 105)14487|916(137|980 †

$$398$$
$$837$$
$$1029$$
$$841$$
$$(16)$$

Hence it will be easy to prepare for your Division at one Station.

* But if any Digit in the Dividend should repeat, that must be continued on, as Occasion requires, *see P.* 46, *&c.*
† *Viz.* 137 *l.* 19 *s.* 7 *d.* ¼.

H   **E X-**

EXAMPLE I.

WHAT is the prefent Worth of 100 *l.* due a Year hence at 5 *l. per Cent. per Annum?*

The Intereft of 1 *l.* for a Year (*fee p.* 42.) is |05, which added to 1, gives 1|05.

Thus ftated 1|05) 100 (But when the Divifor has Parts, and the Dividend is a whole Number, by annexing fo many Cyphers to the right Hand of the Dividend, as there are Parts in the Divifor, (which is here multiplying both by 100, (*fee Note, p.* 20. and the above *Lemma,*) you muft then divide as in the whole Numbers, when the Quote will be fo far Integral (with Parts if divided farther on, *fee p.* 30, 31.) and give the Anfwer required.

Thus * 105) 10000 (95|23 ℰ *viz.* 95 *l.* 4 *s.* 9 *d.* ¼
         550   [nearly.
         250
         400
          850
         (10)

The Product of each Figure of the Divifor, with that of the Quotient, is taken from the Dividend (borrowing fo many tens as are requifite)

---

* From whence you have alfo this Proportion, *viz.* As 100 *l.* with its Intereft for the given Time is to 100, fo is any Principal to its prefent Worth.

requifite) and the Remainder at the fame Time only fet down. Thus 9 times 5, *viz.* 45 from 50, the Remainder 5 is fet down ; next 9 times 0 is 0, with 5 that was borrowed is 5, from 10 leaves 5, which is alfo fet down ; laftly, 9 times 1 is 9, and 1 that was borrowed is 10, from 10 leaves no Remainder, the like with others.

But when the Principal and Divifor both confift of Parts, you muft feparate fo many from the Principal to the left Hand, as there are in the faid Divifor, when if the Parts in the faid Principal falls fhort, you muft annex a * Cypher or Cyphers as in *Example* I.

E X A M P L E II.

WHAT is the prefent Worth of 144 *l.* 17 *s.* 7 *d.* due a Year hence at 5 *l. per Cent. per Annum.*

Firft Station 1|05)144|87916
Second *ditto* 105)14487|916(137|980 †
$$398$$
$$837$$
$$1029$$
$$841$$
$$(16)$$

Hence it will be eafy to prepare for your Divifion at one Station.

---

* But if any Digit in the Dividend fhould repeat, that muft be continued on, as Occafion requires, *fee P.* 46, *&c.*

† *Viz.* 137 *l.* 19 *s.* 7 *d.* ¼.

H

EXAMPLE III.

WHAT is the prefent Worth of 1 *l.* due a Year hence, at 5 *l. per Cent. per Ann.*

Which ftated according to the Rule is 105)100 but feeing it will not go therein, you muft add Cyphers to the Dividend to bring out the Quote in Parts, *(fee P.* 30 *&* 31,) which will then be us follows;

$$105)100|0\,(|95238\ viz.\ 19\,s.\ 0\,d.\ \tfrac{1}{2},\ \&c.$$
$$550$$
$$253$$
$$400$$
$$850$$
$$10$$

From *Example* I. it is feen that by taking the Intereft of 100 *l.* for a Year therefrom, according to the cuftomary Method, is taking 4 *s.* 9 *d.* and nearly $\frac{1}{4}$ too much.

And from *Exam.* II. it will be found nearly 7 *s.* too much.

Proceeding according to thefe Rules with any other Rate, which is very eafily found from *Rule* p. 23 and 24, *&c.* you wil have the Anfwer accordingly.

E X A M P L E IV.

WHAT is the prefent Worth of 193 *l.* 13 *s.* 10 *d.* due five Years hence, at 4 *l.* 10 *s. per Cent. per Annum.*

Rate at 5 *per Ct.* 05
Double *ditto* requ- 9
Rate *ditto*   045
Years ──   5 >Given Prin. 193|6916.
Int. for 5 Years 225
Ad.to 1 *l. &c.*is1|225

Stated *per* foreg. 1225)193691|*6(158|1156†
7119
9941
1416
1916
6916
7916
&c.

After this Manner you may proceed with any Principal and Rate required.

* As 6 the laft Figure in the Dividend repeated, it was brought down to the refpective Remainders.

† *Viz.* 158 *l.* 2 *s.* 3 *d.* ¾.

The

	l.	*s.*	*d.*
The aforesaid Principal, —	193	13	10
Interest *ditto* for 5 Years deduct	43	11	7 ¼
Rem. accord. to custom. Meth.	150	2	2 ¾
But the present worth *per* last, is	158	2	3 ¾
Which is taking too much by	8	0	1

E X A M P L E V.

WHAT is the present worth of 193 *l.* 13 *s.* 10 *d.* due 217 Days hence, at 4 *l.* ½ *per Cent. per Annum.*

Here (as in *P.* 42.) the Interest of 1 *l.* for 217 Days, is the same as 217 *l.* for one Day. Therefore in the Table against 146 is 02, and against 71, is 9726, *viz.* 029726 at 5 *l.p C. p A.*

Double Rate   9
For 4 ½ *per Cent.* 025753(4

And *per* fore. 1025753)193691666(188|8287
                      9111636
                      9056126
                      8501026
                      2950026
                      8985206
                      7791826
                        &*c.*

* See Note, *page* 73, 75.

Here

Here the prefent Worth is 188 *l.* 16 *s.* 7 *d.* nearly.

	l.	*s.*	*d.*
Principal ——— —	193	13	10
Intereft 217 Days deduct	5	3	7 $\frac{1}{2}$
Remains ———,	188	10	2 $\frac{1}{2}$

Therefore according to the cuftomary Way the Difference is 6 *s.* 4 *d.* $\frac{1}{2}$ in favour of the Difcompter.

The Work of thefe Divifions may many Times be greatly contracted without any fignificant Error ; thus, inftead of bringing down a Place or Figure from the Dividend, at each time cut one off from the Divifor, regarding only the Carriage (as in Multiplication, *pag.* 67.) to the Product, made by the Quotient Figure, and the next right Hand Place, or two, in the Divifor, and this done at every Operation throughout the Divifor, will give the Quote required.

H 3   * Take

* Take the laſt Example.

1|0|2|5|7|5|3) 193691666|(188|8288
911163
90561
8501
295
90
8
(0)

In theſe Contractions it is requiſite pre-
viouſly to determine the Value of the firſt
Figure of the Quotient, as alſo how far it will
be Integral and the like ; when in this Ex-
ample it would have been till the two laſt
right Hand Figures of the Dividend had
been brought down, which at firſt Sight is
found to be three Places.

Secondly, As both the Diviſor and Dividend
are made here Integral, and the Units Place
of the Diviſor, with the firſt Figure of Quo-
tient fell under the third Place from the right
Hand of the Dividend, the firſt Figure of the
Quote will therefore be of the ſame Value
with it, *viz.* in the Place of Hundreds †
which is obvious the like with others.

---

* Which will be beſt for Beginners to work this over-
again on Paper.
  † See Examples, *pag.* 20, &c.

Laſtly,

Lastly, When the remaining Places of the Divisor will not go in those of the Dividend, a Cypher must be put in the Quotient, and another Place in the Divisor be cut off, and so on.

As four Places for Parts are found necessary to be in the Quotient, for securing the Value of Money, you must sometimes, before you begin the Contraction (when the Places of the Divisor are few) bring down some of the Places in the Dividend, by adding Cyphers when requisite, proceeding on as usual.

To illustrate which take Example 4th as follows :

$$1|2|2|5)193691|6(158|1156$$
$$7119$$
$$9941$$
$$1416$$
$$191$$
$$68$$
$$7$$
$$(0)$$

Here the Contraction did not begin till 191 remained, which in this Case (tho' it may in others) was scarce worth while, but for Illustration's Sake.

E X.

EXAMPLE VI.

WHAT is the prefent Worth of *6d.* a Year hence at *5 l. per Cent. per Ann.*

Stated *per* Rules foregoing is

105)2|50(0238 *viz.* 23 Farthings nearly.
  400
   850
   (10)

In this Example *(See Ex. 2d and 3d. p. 73, 74)* the Unit's Place of the Divifor into the firft Figure of the Quote fell under the fecond Place of Parts in the Dividend; the firft Figure or Digit of the Quotient muft therefore be of the fame Value, and a Cypher placed before it for that * Purpofe. If it had fell under the third Place of Parts two Cyphers muft have been placed before it, and fo on, which is the Reverfe to Example *p.* 20.

What is a Security or Bond of 100 *l.* at 4 *per Cent. per Ann.* payable a Year hence, worth at the Expiration of a Quarter of a Year?

In this Cafe the Principal when due will be 104 *l.* next fee how long it is before it comes due, which here is three Quarters of a Year;

---

* Hence appears the Reafon in Ex. 5th and 6th, p. 30 and 31.

then

then find the Interest at the Rate *per Cent.* for the said Time, which here is 3 *l.* the same added to 100 *(See Note to Ex.* 1. *p.* 72*)* is the Divisor, by which dividing the Principal into 100, gives the Answer required.

Thus   103)10400(100|9708   *viz.* 100 *l.*
                1000   19*s.* 5*d.*
            730
              900
                76
                &c.

Of S T O C K S.

E X A M P L E I.

SUppose *South-Sea* or any Stock at 105 ⅓ *l.* when the Half Year's Interest (which is 2 *l.*) is paid off, what will it be worth 87 Days before the next Half Year's Interest becomes due, on that Consideration only?

Int. of 87 *l.* *(See p.* 42.*)* by Table
    a t5 *l. per Cent.* ——   — 011918
Double Rate required *(See p.* 23.*)*   8
                                        009534|4

First State *(See p.* 73.) 1|009534)107|375

2d ditto   1|0|0|9|5|3|4)107375000(106|3609
                          64216
                           3644
                            615
                              9
                             (o)

Giving for Anfwer 106 *l.* 7 *s.* 2 ½ *d.* nearly.

Here it may be obferved, that at the firft
Remainder of five Places, the 4 being cut off
from the Divifor, the remaining 6 Places
would not go in the faid Remainder, a Cy-
pher therefore was put in the Quotient, and
the 3 cut off according to the Rule ; the
fame was done at 9 the Remainder ; the like
with others.

It was likewife plain at firft *(See p.* 78.)
that the Quotient would contain three Places
for whole Numbers, and that, contracting
the Divifion, there would be four Places for
Parts therein.

E X A M P L E   II.

WHEN Stock is at 4 *l. per Cent.* and
114 *l.* is paid for 100 *l.* Stock, what
is that *per Cent.* That is, as 114 is to 100,
fo is 4 to the Anfwer.   Or,

The

The State of the Queſtion may be, If 114 *l.* get 4 *l. per Annum,* what will 100 *l.* get ?

$$114)400(3|5088 \text{ viz. } 3\,l. \quad 10\,s. \quad 2\,d.$$
$$580$$
$$1000$$
$$880$$
$$\&c.$$

EXAMPLE III.

IF there be paid 3 *l.* 10 *s. per Annum* for 100 *l* Stock, and there ſhould after be allowed 4 *l. per Annum* for the ſame, what would 100 *l.* be worth upon that Riſe of Intereſt ?

Viz. As 3|5 is to 4, ſo is 100 *l.* to the Anſwer.

Stated by Rule aforegoing
$$35)4000(114|2857 \text{ viz. } 114\,l. \; 3\,s. \; 8\,d. \tfrac{2}{3}$$
$$50$$
$$150$$
$$100$$
$$300$$
$$200$$
$$250$$
$$\&c.$$

If when Stock is at 112 *l.* there be 4 *l. per Ct.* paid, what would it be worth if reduced to 3 *per Cent.*

As

As 4 to 112, so is 3 to the Answer, *viz.* 84, &c.

EXAMPLE IV.

IF 100 *l.* Stock be bought for 93 ½ for which is paid 4 *l.* Interest *per Annum*, what is that *per Cent.*

As 93 ½ is to 100, so is 4 to the Answer.

$$935)4000(4|2780 \ viz. \ 4 \ l. \ 3 \ s. \ 6 \ d. \ \tfrac{3}{4}$$
$$2600$$
$$7300$$
$$7550$$
$$70$$
$$\&c.$$

EXAMPLE V.

IF 100 *l.* Stock be bought for 93 ⅜ *l.* (*viz.* 93 *l.* 7 *s.* 6 *d.*) for which is paid 4 *l.* Interest *per Annum*, what is that *per Cent.*

Stated, &c. 9|3|3|7|5)400000)4|2838 *viz.* 4 *l.*
                    26500   [5 *s.* 8 *d. p. Ct.*
                    7825
                    355
                    75
                    (0)

Here it is to be observed, that the Product of the Division of the first Figure of the
Quo-

Quotient took up all the Places of the Dividend, fo that there could be no more Integrals in the Quotient ; next it is alfo as eafily obferved, that by contracting there would then be 4 Places of Parts, for the Quotient, &c.

EXAMPLE VI.

IF a Blank Lottery Ticket, or Annuity, of 6*l.* be fold for 5*l.* 7*s.* 6*d.* what will a Blank of 100*l.* be worth at that Rate?

That is, as 6 is to 5|375, fo is 100 to the Anfwer.

Thus 6)†537|5(89|583 *viz.* 89*l.* 11*s.* 8*d.*

$$57$$
$$35$$
$$50$$
$$20$$

EXAMPLE VII.

IF 100*l.* Lottery Prize be fold for 94$\frac{1}{2}$*l.* (*viz.* 94*l.* 10*s.*) what will a Blank of 6*l.* be fold for ?

That is, as 100 is to 94|5, fo is 6 to the Anfw.

$$6$$

5|670 *viz.* 5*l.* 13*s.* 4*d.* $\frac{3}{4}$

† Which is mnltiplying 5|375 by 100. *See Ex.* 2. *p.* 20.
* Which is divided 567|0 by 100. Or 94 might have been firft feperated for Parts. *See p.* 61, 62.

I   EX-

E X A M P L E VIII.

WHEN Stock is at 112 *l.* 10 *s.* how much may be bought for 828 *l.*
Viz. as 112|5 is to 100, fo is 828 to the Anfwer

$$1125)828000(736$$
$$4050$$
$$6750$$
$$(0)$$

E X A M P L E IX.

IF 100 *l.* Stock is worth 112 *l.*|5 what will 736 *l.* Stock be worth ?

$$112|5$$
$$736$$
$$\overline{}$$
$$6750$$
$$3375$$
$$7875$$
$$\overline{828|000}\ \text{Anfwer.}$$

Of

Of B R O K E R A G E.

E X A M P L E I.

WHAT is the Brokerage of 2116*l*. 16*s*. at 1 *l. per Cent*.

Anfwer ——— 21	168 *viz.* 21 *l.*	3 *s.*	4 *d.*	$\frac{1}{4}$
At $\frac{1}{2}$ *per Cent*. 10	584 *viz.* 10 *l.*	11 *s.*	8 *d.*	$\frac{1}{4}$
At $\frac{1}{4}$ ditto — 5	292 *viz.* 5 *l.*	5 *s.*	10 *d.*	
At $\frac{1}{8}$ ditto — 2	646 *viz.* 2 *l.*	12 *s.*	11 *d.*	

Here the Sum of the three laft is $\frac{7}{8}$ *viz.* $\frac{4}{8}$ $\frac{2}{8}$ and $\frac{1}{8}$.

For $\frac{3}{8}$ take the $\frac{1}{4}$ and $\frac{1}{8}$, for $\frac{5}{8}$ the $\frac{1}{2}$ and $\frac{1}{8}$, for $\frac{6}{8}$ the $\frac{1}{2}$ and $\frac{1}{4}$.

If it be required for 2 $\frac{1}{2}$, 3 $\frac{1}{2}$ *per Cent*. &c. it is only multiplying what it is at 1 *per Cent*. by 2, **3**, *&c.* refpectively, and adding thereto the $\frac{1}{2}$, *&c.* of the 1 *l. per Cent*.

Or it may be done by multiplying what it is 1 *l. per Cent*. by the Expreffion found for the Parts of the *l.* Sterling ; fuppofe $\frac{5}{8}$ *viz.* 12 *s.* 6 *d.* which Expreffion *per* foregoing is |625 Parts.

At

At 1 *l. per Cent.* as before is 21|168
Rate inverted for 2 Places   * 526|0

$$
\begin{array}{r}
1270 \\
42 \\
11 \\
\hline
13|23
\end{array}
$$

$\frac{1}{2}$ or $\frac{4}{8}$ as before is   10|584
    $\frac{1}{8}$ ditto ——   2|646
Same as above   13|230

If it had been required for 2, 3, and $\frac{5}{8}$ *perC.*
&c. it would have been prefixing the Integral
to the Parts and Multiplying. As in *p.* 66,
67, 68.

By this Method may the Parts be found in
p. 30, 31, *&c.* as in *Example* 6. *p.* 31,
where the $\frac{1}{16}$ |026 was required to be taken.

The Expression for $\frac{1}{16}$ *viz.* 1*s.* 5*d.* is |0625
                      |026 †
               |0016250

Here as the Number of the Parts in both
Factors are seven, therefore two Cyphers are
prefixed to the Product, to make it consist of
so many Places; see *Rule p.* 63, *&c.*

† The two Places (in dividing by 100) as in *p.* 61, *&c.*
is performed with all the Numbers in the Table.

Of

Of ANNUITIES IN PERPETUITY.

EXAMPLE I.

IF 740 *l.* Principal be given for an Annuity so as to have 6 *l. per Cent. per Ann.* for the said Principal. Quere the Annuity?

As 100 is to 6 so is 740 Princip. to the Anf.

$$\begin{array}{r} 6 \\ \hline 44|40 \end{array}$$

viz. 44 *l.* 8 *s.* 0 *s.*

EXAMPLE II.

IF an Annuity of 44 *l.* 8 *s.* be to be fold, so as to be allowed 6 *l. per Cent. per Ann.* for the Principal or Purchafe-Money. Query the Principal?

As 6 the Rate of Intereft is to 100, so is 44|40 the Annuity, to the Anfwer.

6)44440(740 Principal required.

EXAMPLE III.

IF an Annuity of 44 *l.* 8 *s.* be bought for 740 *l.* what is that *per Cent. per Ann.* for the Principal?

I 3

As

As 740 the Principal is to 100, so 44|4 the Annuity to the Answer.

$$740)4440(6 \text{ Answer.}$$
$$(0)$$

EXAMPLE IV.

IF the Rate of Interest be 6 *l. per Cent.* how many Years Purchase must be given for any Annuity?

As the Rate is to Unity, so is 100 to the Answer.

$$6)100(16|6 \text{ Answer, } viz. 16 \text{ Y. } 8 \text{ M.}$$
$$40$$
$$40$$
$$(4)$$

Or if you would find the Number of Days answering to the Parts of a Year, which is here 6.

Then half of 6, &c.
will be — — |033333*
Then in the Table agst. 03   is 219 Days.
     Remainder   003333
Against next less in Tab. 003288 is 24 Days.
                     243 ditto.
     Remainder 000045

If

* See *pag.* 55, 56, which is the reverse of *pag.* 53, 54.

If Curiosity wants the Value of the last Remainder, *viz.* 45, that must be sought for among the Interest of Shillings, and against 41 the next less is 6, to which add a fifth of itself, which will be so many Hours, and the Remainder so many times 12 Minutes, *viz.* 7 Hours 12 Minutes; the last Remainder 4, sought amonst the Interest of the Pence, *viz.* against 3 and 1, or twice 2, will be found 7, which may be taken 8, on Account of the repeating 3, when it will be so many times 6 Minutes, or 48 Minutes, making together 8 Hours; giving for Answer 243 Days 8 Hours. *

When the Principal, or Purchase-Money, and the Annuity are given, the Number of Years Purchase may be found by dividing the former by the latter.

As in Ex. 3*d* 444)7400(16|6 as before.
2960
2960
(o)

EXAMPLE V.

IF 16|6 Years Purchase be given for an Annuity, what is that *per Cent. per Ann.*

As 16|6 Years Purchase is to Unity, so is 100 to the Answer.

viz.

* All the Cyphers before the several Remainders might have been supposed.

viz. 166)1000(6 Anfwer.
$$\underline{1000}$$
(0)

THE following Queſtion is taken from that uſeful Book of Recreations compiled by *Martin Clare*, Eſq; Maſter of the Academy in *Soho-Square*, where the Anſwers are only inſerted without their Proceſs, for the Exerciſe of his Pupils; which containing all the Caſes of Simple Intereſt, I have here introduced it, and given the Rules in the Operations through all the Varieties.

A Bond was made *Auguſt* 7, 1713, at 6*l.* *per Cent. per Annum*, for 1114*l.* 10*s.*—On *May* 11, 1718, 140*l.* was paid off, and a freſh Bond given for the Remainder at 5*l.* ¼ *per Cent. per Annum.* At the Time the Intereſt of this laſt was 21*l.* 16*s.* 8*d.* there was paid off 87*l.* 11*s.* 9*d.* The old Bond being then taken up, and a new one given for the Reſidue, which being paid off *September* 11, 1724, the Principal and Intereſt came to 1409*l.* 16*s.* 8*d.* What Rate of Intereſt did this Bond carry?

This Queſtion has ſeveral Conditions: The firſt is, that from the 7th of *Auguſt* 1713, to ditto 1717, are juſt 4 Years; next, in the lower Row under *Auguſt* in the Table, are

153

153 Days to the 1st of *January* in the fol-
lowing Year, and under *May* in the upper
Row are 120, making 273 Days, *viz.* from
Auguſt 7, to *May* 7, following : But ſeeing
it is to 11th of *May*, 4 Days muſt be added,
making 277 Days ; therefore the firſt Con-
dition requires the Intereſt to be found of
1114 *l.* 10 *s.* for 4 Years and 277 Days, at
6 *l.* per *Cent. per Annum.*

Thus the given Principal is   1114|5
The Rate 6 into 4 the No. Years,   24

    Intereſt for 4 Years 267|480
Intereſt of 1114 *l.* 10 *s.* from the Table at 5 *l.*
  per *Cent.* for a Day is
     |152671
Double Rate —   12
At 6 *per Cent.*   183205(2
   Days   277
     1282435
     4946535

         50|747785
Int. for 4 Years and 277 Days   318|227785
    Principal —   1114|5

Princ. and Int. or the Amount   1432|727/85
At which time there was paid off   140|
Principal due *May* 11, 1718 — 1292|727785

  Or the Intereſt for 4 Years, 277 Days,
may be found otherwiſe, *viz.*

         Find

Find the Expreſſion for 277 Days by *p.* 51, and 53.

<pre>
                                      277 D.
Thus ag. (the next leſs in Tab.) 219 is 03
Dit. (in 1ſt Part dit.)   —   58 is   7945
    Expreſſion   —   —   037945
Double is for 277 Days   0|75890
</pre>

This put for Parts after 4, the Number of Years, is 4|7589, the Expreſſion for 4 Years, 277 Days.

Next the Intereſt of 1114|5*l.* at *6l. per Cent.* for one Year (*See p.* 61, *&c.*) is 66|87 *l.* which multiplied by the Expreſſion for the whole Time, or that by this, as being leaſt in Number of Places, gives the Intereſt required. Thus,

<pre>
                 4|7589
                 66|87
                 ────────
                 333123
                 380712
                285534
               285534
               ──────────
               318|227643 *
</pre>

Either of which Ways, in like Caſes, may be uſed at Pleaſure, or as ſhall be found moſt convenient.

The

* The Difference between this and the former is of no Signification, and is owing to a ſmall Defect in the Expreſſion for the Number of Days.

The next Condition is, that when this Principal had gained 21 *l.* 16 *s.* 8 *d.* at 5¼ *per Cent. per Ann.* 87 *l.* 11 *s.* 9 *d.* was then paid off.

To find the Time that any given Principal, at any given Rate, ſhall gain a given Intereſt.

R U L E.

MUltiply the Principal by the Intereſt of 1 *l.* for a Year at the ſaid Rate, next divide the given Intereſt by the Product, and the Quote is the Anſwer.

· Firſt the double of the Rate is —— —— 10|5
And *per* Tab. the Int. of 1 *l.* for a Year
   at 5 *per Cent.* *(See p.* 42.) is —— —— |05
Int. ditto at 5 ¼ *per Ct.(See p.*23,87,88) |0525

Principal —— —— —— 1292|727 785
Int. inverted for 4 Places 5 250,0
   *(See p.*67,70)   6463 64
                  258 54
                   64 64

Product with 4 Places   67|86 82

Or

Or divide by 100 *   12|92727785
At 5 *per Cent.*   5

                              64|63638925
¼ Principal, &c.   3|23181946
At 5¼ as before   67|:6820871

The Interest, *viz.* 21|83 is *per* the Rule to be divided by the said Product, *viz.*

678|6|8|2)218333|3(|3217 Parts of a Year,
         14728 7   *viz.* 117 Days,
         1155 1   &c. *See p.* 90.
          476 4
           (13)

The 117 Days added to *May* 11, the Date of the Bond, points out *Sept.* 5 following, *(See p.* 3 *)* when the aforesaid 87 *l.* 11 *s.* 9 *d.* was paid off.

Thus the given Principal was   1292|727785
Int. of ditto to *Sept.* 5, &c.   21|833333
Princ. and Int. or the Amount, 1314|5611(18
Paid off then —— —   87|5875

Remains due —— ——   1226|9736

The other Condition is, that on the 11th of *September* 1724, *viz.* for 6 Years and 6 Days, this Sum, with its Interest for that Time amounted to 1409 *l.* 16 *s.* 8 *d.*

                                                            It

* See Note p. 61.

It is required to find what was the Rate of Interest.

R U L E.

FROM the given Amount subtract the given Principal, the Remainder will be the Interest for the said Time; next divide the Remainder (*viz.* Interest) by the Product of the Principal multiplied into (or by) the Time, the Quotient will be the Rate of Interest for 1 *l. per Ann.* which multiplied by 100 gives the Answer *per Cent. per Ann.*

The Amount here given is	1409|8333
Principal ditto,	1226|9736
Remainder, or Interest,	182|8597

The Time given is 6 Years and 6 Days; next to find the Expression for 6 Days (*See p.* 53) in the Table against 12 (the Double) is 1644, but two Cyphers are to be (or supposed) prefix'd, and *per* Rule (*p.* 51, 52, 53) one seperated to the left Hand gives |01644, which with the 6 Years is 6|01644, the Expression for the whole Time.

K   The

The Principal, as before, is   1226|9736
Time inv. for 4 Places in the Prod.   446106
_____
            73618416
              122697
               73618
                4908
                 491
_____
Product of Prin. mult. *per* the Time 7382|0130

Which *per* the Rule is the Divifor, and 182|8597 the Dividend. Thus

7|3|8|2)182|8597(|024771, which multiplied
      35219   by 100 gives
       5691   2|4771(*fee p.*19)
        524   *viz.* 2*l.* 9*s.* 6$\frac{1}{2}$*d.*
          7   Anf. *per C. per A.*
        (0)   *&c.*

If it is required to prove this, the Queftion will be, if 100*l.* gain 2 *l.* 9*s.* 6$\frac{1}{7}$*d.* in a Year, what will 1226|9736 *l.* gain in 6 Years and 6 Days?

Or if 1 *l.* gain |024771 in a Year, what will 1226|9736 gain in the above Time?

                                 The

The Principal as before   1226|9736
Invert. for 4 Places of Pts. in the Prod.   177420|0

                                   245395
                                    49079
                                     8589
                                      859
                                       12
                                   ‾‾‾‾‾‾
Viz, for one Year,   30|3934
Time inverted for 4 Places of
Parts in the Product,   44610|6
                                   ‾‾‾‾‾‾
                                   1823604
                                      3039
                                      1823
                                       121
                                        12
                        Anſwer   182|8599

If the Operations had been for more Places
of Parts in the Product than 4, the fourth
Place would have been true; but that is no
Way material, it being but a thouſandth
Part of a Farthing Odds.

If the ſecond Condition be required to
prove back, *viz.* for 117 Days, *&c.* it will
be neceſſary for Exactneſs to have Regard to
the Hours or Parts of a Day.   Thus

The Parts as there
found were —— 3217 *
     Ordered, &c. |016085
In the Tab. againſt 01 - - is 73 Days
       Rem. - - - - 6085
Dit. —— —— —— - - - 6027 44 Days
        Rem. —— - - - - 58, 117 Days
                  ——   H. ʹ
† Dit. among the Sh. -- - 55   8 *viz.* 9   36
Dit. am. the Pence —— —— - 3 is 5 dit. - - - 30
                        H.   ʹ
                   Viz. 10   6

To find the Expreſſions for the Hours and Minutes, divide the Min. by 6, adding one more to the Quote if the Remainder be 3 or upwards ; next, annex this Quote to the Hours as Parts, which divided by 24 this laſt Quote will be the Anſwer. ‖

Thus 24)10|1(|42 the Anſw. required.
      50
     (0)

Therefore the Expreſſion for the Days and Hours, &c. is 117|42

The State of the Queſtion now is, What is the Int. of 1292 *l.* 14 *s.* 7 *d.* for 117|42 Days, at 5 ¼ *l. per Cent per Annum.*

                         The

* See p. 96.
† See p. 90, 91.
‖ Otherwiſe multiply 101 by 4, adding to the Pro-duct one ſixth of the ſaid 101, ſeparating all for Parts, the like with others.

The Int. from the Tab. at 5 *per Ct.*
  for a Day is ——— ——— —— — 177086
(and the double Rate 10 ½)
Dit. mult. by 10(wh. gives 7 Places)is 1770860
              ½ Int. at 5 *per Cent.* -- 88543

Int. at 5 ¼ *per Cent.* for a Day — 18594(03*
No. Days inv. for 3 Pl. in the Prod. 24711
                                      18594
                                       1859
                                       1302
                                         74
                                          4
        Viz. 21*l.* 16*s.* 8*d.* — † 21|833 An.

Or the Interest at 5*l. per Cent.* may be re-
duced to any other Rate universally as in
Page 65.
Thus the Expression for double the Rate
(*see P.* 42) is 10|5 by which multiply the Int.
for a Day at 5 *p.Ct.viz.* 177086

              885430 (*See P.* 36)
            ――――――――
            18594030 Prod. by 105

Here the Product consists of ‖ 8 Places of
Parts, but the first 5 are sufficient for Use.
Another Condition may be added to these,
as, What Principal at 6 *per Cent. per Annum*
                K 3   shall

* See Note p. 10, & p. 23.
† See p. 96.
‖ *viz.* 7 by p. 23. and one for that in the Rate. See
p. 88.

ſhall in 4 Years and 277 Days amount to
1432*l*. 14*s*. 6*d*.$\frac{3}{4}$.

RULE.

MUltiply the Time by the Rate or In-
tereſt given of 1 *l*. for a Year, to the
Parts of which Product ‖ prefix (or † add)
an Unit, by which dividing the given A-
mount, gives the Anſwer required.

The Expreſſion for 277 Day (*ſee p*.53, 90) is
|7589, and the 4 Years prefix'd is   4|7589
The given Rate of 1 *l*. for a Year |06
  (*ſee p*. 23, *&c*.)
Product with Unity prefixed   1|285534

The Expreſſion for the given Amount is
1432|728125, both which ordered will be

128|5|5|3|4)1432728125(1114|5 Anſwer.
          147194
           16641
            5786
             644
             (1)

‖ When the Product conſiſts of all Parts.
† When it conſiſts of Integers and Parts.
* See p. 78.

                                        SUP-

SUPPLEMENT.

The Construction of the Table.

IT has been observed (*p.* 42.) that |05 is the Expression for the Interst of 1 *l.* for 365 Days, at 5 *l. per Cent. per Ann.*

'Therefore dividing |05 (*annexing Cyphers to the right Hand) by 365, the Quote will be the Expression of the Interest of 1 *l.* for a Day at that Rate.

But 365 and |05 are both divisible by 5, and leave no Remainder ; their Quotes, therefore, *viz.* 73 and |01, divided in the same Manner, will give an equal Quotient.

This is the Converse to Lemma *p.* 71, as is plain by multiplying 73 and |01 back by 5 :

$$\text{Thus} \quad 73)0100(\dagger 0001\overset{\cdot}{3}6986\overset{\cdot}{3}$$
$$270$$
$$510$$
$$720$$
$$630$$
$$460$$
$$220$$
$$(1)$$

Here

* See p. 30, 31.
† See p. 80.

Here the laft Remainder is the fame as at firft in the Dividend ; and by dividing on it may be obferved, that the Quote will continually repeat in the fame Order as dotted ; which here needs no farther Confideration.

Next as 136 is followed by 9, and that again by 8, &c. * it may moftly, without any fignificant Error, be taken |000137, anfwerable to 137 in the Table againft 1 *l.* with three Cyphers fuppofed.

Again, from   137 . . . .
Take the faid Quote, 1369863
Remainder,   0000137

Hence it is plain, that if 137 be placed the fifth Place to the right Hand under itfelf, (fuppofing Cyphers) and fubtracted therefrom, it will give the aforefaid Quote, *viz.* the Intereft of 1 *l.* for one Day, at *5 per Cent. per Ann.*

Thus   137 . . . .
                      137
Same as before, 1369863

From whence it is eafy to conceive, that any Product made by 137, fet a fifth Place under itfelf, and fubtracted in like Manner,
will

* See p. 15.

will give the fame as if it had been multiplied by 1369863, the Intereft of 1 *l.* for one Day.

It is obvious, that if the Intereft of 1 *l.* for one Day, be multiplied by any Number of Pounds, the Product will be the Intereft of the faid Number of Pounds for one Day, which leads to the following Problems.

P R O B. I.

WHAT is the Intereft of 67 *l.* for a Day, at 5 *l. per Cent. per Ann.*

As the greater Factor is   137
Multiply by   67
                  9179

As there are always three Cyphers fuppofed prefixed to 137, there will, when the given Pliucipal is Integral, be fix Places of Parts in the Product, *(fee p. 5.)* fo that two Cyphers are here to be fuppofed prefixed.

Next, in general, there need only the laft left Hand Digit in the Product be fet a fifth Place below itfelf, and fubtracted.

Thus,   9179
               9
           9178|1

                      Which

Which Product will then confiſt of ſeven Places; but as ſix are ſufficient, and the laſt Place under 5, it may be omitted, and is the ſame as in the Table againſt 67, *viz.* 9178.

P R O B. II.

WHAT is the Intereſt of 8 *l.* for a Day at 5 *per Cent. per Ann.*

$$\begin{array}{r} 137 \\ 8 \\ \hline 1096 \end{array}$$

Here it may be ſeen, that if 1 be taken as before the ſixth Place wonld be 5, and the ſeventh 9, in which * Caſe the ſixth might have remained as at firſt; from whence it follows, that when the laſt left Hand Digit in the Product is 5 or upward, the laſt to the right Hand is to be made one leſs, and when under 5 to remain as it is, *&c.* And the above 1096 the ſame as againſt 8 in the Table.

P R O B. III.

IT may likewiſe be obſerved, that the ſeveral Intereſts of 1 *l.* in the firſt Part of the Table, as far as 37 *l.* are Multiples of

137;

137 ; but againſt 37 is 5068, and 137 into 37 gives 5069.

But from the preceding Remark, as the laſt left Hand Digit is 5, *&c.* the laſt right Hand muſt be made an Unit leſs, when it becomes, as in the Table, the like with the ſucceeding Intereſts, to end Part 1ſt.

P R O B. IV.

T HE Intereſt for the Shillings may like-wiſe be found in the ſame Manner.

Multiply   —   —   137
By the Expreſſion for a Shilling * |05
                                  ―――
                                   685

Here, as there are ſix Places of Parts in the Multiplicand, 137 with three Cyphers ſuppoſed, alſo two in the Expreſſion for a Shilling, there muſt be eight in the † Pro-duct, and conſequently five Cyphers ſup-poſed prefixed thereto ; next, as 8 in the ſe-venth Place exceeds 5, the 6 may be taken 7, as in the Table, with five Cyphers ſup-poſed (*ſee p. 4.*)

P R O B.

PROB. V.

Again multiply   —— —— 137
By the Expression for 19 Shillings |95

                    685

               1233

             130(15

Here are only three Cyphers to be suppoſed, and as the ſeventh Place is under 5, therefore 130 is the Expreſſion for 19 Shillings, with three Cyphers ſuppoſed, as in the Table, (*ſee p.* 4.)

PROB. VI.

THE Expreſſion for a Shilling, *viz.* 685, divided by 6, gives 114, *&c.* with five Cyphers ſuppoſed ; therefore 1, as in the Table, is the Expreſſion for Two-pence, and from this may thoſe for all the Pence, *&c.* be found, as in p. 11.

Or this may be done by reducing the Pence, *&c.* to Farthings, as in p. 42, and multiplying the Expreſſion by 137.

                                PROB.

P R O B. VII.

WHAT is the Expreſſion for the Intereſt of 7 *d.* for a Day, at 5 *per C. per Ann.*

The Expreſſion for 7 *d.* is

$$
\begin{array}{r}
|02917 \\
137 \\
\hline
20419 \\
37921 \\
\hline
3|99629
\end{array}
$$

Here are eleven Places to be conſidered for the Product, and five Cyphers ſuppoſed prefixed, but for Uſe, ſix Places at moſt being ſufficient, the 3 is ſeparated for that Purpoſe ; next, ſeeing that two nines follow, it may by the foregoing ſafely be taken 4, anſwering to twice 3 *d.* ¼ in the Table. The like with others.

P R O B. VIII.

WHAT is the Expreſſion for the Intereſt of 19 *s.* 9 *d.* for a Day, at 5 *l. per Cent. per Ann.*

L   The

The Expreſſion for 19 s. 6 d. is |9875
Multiply by   ———   137
————
69125
128375
————
135|2875

In the Table againſt 19 s. is 130, and a-
gainſt 9 d. *viz.* 5 d. and 4 d. are 3 and 2,
making 135, with three Cyphers ſuppoſed,
ſuppoſed, as above.

Theſe Multiplications may likewiſe be
greatly contracted (*ſee p.* 66, 67) by placing
the 7 under that Place for the Number of
Parts deſigned for the Product, and invert-
ing 13 to the right Hand, as follows.

P R O B.   IX.

WHAT is the Intereſt of 63 l. 13 s.
5 d. for a Day, at 5 l. *per Cent. per
Ann.*

Principal ordered is   63|67083

Here it may be obſerved, that if all was to
be multiplied by 137, there would be eleven
Places of Parts in the Product ; but as ſix
are the moſt requiſite, and always enough,
place the 7 under the Unit's Place of the In-
tegral

tegral Part of the Principal, inverting 13 to the right Hand.

Thus   63|67083
           7 3 1

Where you may omit multiplying by 1, and begin with the 3, obferving the Carriage of 7, the right Hand Digit in the Principal; next, to this Product add the faid right Hand Digit, proceeding on as in multiplying by 13 in one Line (*fee p.* 34) ; laftly, multiplying by 7 according to the Rule, &c. you will have the Product of fix Places of Parts required.

Principal, &c.   63|67083
13 inverted   731 †
                   ‾‾‾‾‾‾‾‾‾‾
                      8277
                       446
                   ‾‾‾‾‾‾‾‾‾‾
                      8723

Next, by the foregoing 8 placed a fifth Place, &c. and fubtracted, leaves 8722 with two Cyphers fuppofed prefixed, &c. which will be found to agree with the Table.

L 2   When

When the Principal confifts all of Parts, you muft put or fuppofe a * Cypher before them, which will then be the Unit's Place, operating in other refpects as before.

PROB. X.

WHAT is the Intereft of 19 *s.* for a Day at 5 *per Cent. per Ann.*

† Principal, &c.   0|9875
                     7 3 1
                    ———
                    1 2 8
                       7
                    ———
                    1 3 5

With three Cyphers fuppofed, &c. the fame as before ; the like with all others.

In the fecond Part of the Table againft 73 is |o1, the Reafon of which may be eafily feen from *p.* 42, and the firft of this Supplement.

And by taking Multiples of thefe ; are all the Numbers formed in the faid fecond Part.

But they may be alfo formed, following the Rule, in multiplying by 137.

* Which is the Reverfe to p. 70.
† See Prob. 8.

PROB.

P R O B. XI.

WHAT is the Interest of 73 *l.* for a Day, at 5 *l. per Cent. per Ann.*

$$
\begin{array}{r}
137 \\
73 \\
\hline
411 \\
959 \\
\hline
10001
\end{array}
$$

Here 1 placed a fifth Place to the right Hand, aud subtracted, leaves 10000, and the Cypher prefixed to make up six Places for the Product, it becomes |01, as in the Table.

P R O B. XII.

WHAT is the Interest of 2263 *l.* for a Day, at 5 *l. per Cent. per Ann.*

$$
\begin{array}{r}
2263 \\
137 \\
\hline
15841 \\
29419 \\
\hline
310031
\end{array}
$$

Sub.   31

|310000 the same as in the Table.

L 3   If

If the Principal had confifted likewife of Shillings, Pence, &c. you muft have operated as in Prob. 9. and fo with all others.

If any other Rate, or Number of Days, fhould be required, you muft proceed in all Refpects as before taught.

P R O B. XIII.

WHAT is the Intereft of 100000 *l.* for 22 Days at 5 *per Cent. per Ann.*

First, 137 by the Principal gives   13700000
Product placed a fifth, &c.   137
Int. for a Day at 5 *l. per Cent.*   13|69863*

Then by Rule *(p.* 23.) this is to be multiplied by double the Rate, and a Place more feparated for Parts, &c. which let firft be feparated thus,

$$1|369863$$

Next, multiply this by double the Rate into the Time, *(viz.* 132) fo as to have only four Places of Parts in the Product.

* See Ex. 5. p. 22.

Thus

Thus   1|369863
Double Rate, &c. inverted,   231
         ———————
         1780822
          27397
         ———————
         180|8219*

Any Annuity given, to find what that is *per* Day.

Dividing the Annuity by 365, or first by 5, and that Quote by 73, gives the Anfwer required.

Otherwife,

First double the Annuity, next feparate one Integral Place to the right Hand, which makes one Place more to the Parts (if any before) laftly multiply this by |0137, &c. †, the Product gives the Anfwer required.

P R O B. XIV.

AN Annuity of 54 *l.* 15 *s.* what is that *per* Day?

              Viz.

* See p. 33.
† Which is the Quote of Unity divided by 73, &c.

Viz. 54|75 ordered by the Rule is   10|95
                                          |0137
                                        ――――――
                                          7665
                                        14225
                                        ――――――
                                        | 50015
Product placed, *&c.*   — —   15
Viz. 3 Shill. the Answer,   —— |15 . . . †

By this Rule may the Expression for any Number of Days of a Year be also found.

P R O B. XV.

WHAT is the Expression for 277 Days?

Double ditto ordered, *&c.* is 55|4
                                 |0137
                               ――――――
                                 3878
                                 7202
                               ――――――
                               |75898
Product placed, *&c.*   —   76
                               ――――――
Answer for six Places |758904*

† See Ex. 1. p. 51.
* See p. 94.

P R O B.

P R O B. XVI.

WHAT is the Expreſſion for one Day of a Year?

First, — |0137
Day ordered, &c. |2
————
|00274

Here a Cypher is prefixed to the Product, to make it equal to the Number of Parts in both Factors. (*See p.* 88)

As |00274 * is the Expreſſion for one Day, any Number of Days alſo multiplied thereby will give the Expreſſion required, obſerving to place the Product a fifth under itſelf, &c. whence you may have it for all the Places; but 5 or 6 is ever ſufficient.

Any daily Sum given, to find what that is *per Ann.*

Multiplying the Expreſſion by 365, or by 5, and that Product by 73, gives the Anſwer.

Otherwiſe,

Separate the firſt Place of Parts to the left Hand, next multiply the half thereof by 73, which gives the Anſwer required.

* Which is the Quote of Unity divided by 365, &c.

P R O B.

P R O B. XVII.

AT 3 Shillings *per* Day, what is that *per Ann.*

Expreſſion for 3 Shill. *&c.*	1|5
Half	|75
	73
Viz. 54 *l.* 15 *s.* Anſwer.	54|75 ‖

P R O B. XVIII.

AT 3 *l.* 13 *s.* 6 ¾ *d.* *per* Day, what is that *per Ann.*

The Expreſſion, *&c.* is	36|78115
Half	18|390625
	73
	1324|515625 * Anſw.

Viz. 2342 *l.* 10 *s.* 3 ¾ *d.*

By this Method may the Number of Days anſwering to any Expreſſion be found.

P R O B. XIX.

WHAT are the Number of Days an-ſwering to \|758904 †

Ex-

‖ See *p.* 56.
* Multiply by 4, as in *p.* 40.
† See *p.* 116.

Expreſſion ordered, &c. 7|58904
    Half   3|79452
                    73
              ─────────
              276|99996

Anſwer 277 Days (ſee p. 15)

P R O B. XX.

WHAT are the Number of Days anſwer-
    ing to |3217*
        Half, &c.   1|6085
                        73
                  ─────────
Anſwer 117 Days, &c. 117|4205
                          24
                    ─────────
    Hours,   10|0920
                        60
                  ─────────
    Minutes, &c.   5|5200

Here the Parts of a Day are multipled by
24, which gives the Hours, and the Parts of
an Hour by 60, which gives the Minutes;
the like with all others; but ſuch Exactneſs
is ſeldom or never wanted.

P R O B. XXI.

WHAT are the Number of Days anſwer-
    ing to |6, in p. 90.

The

The half ordered becomes 3, an Integral,
by which multiply   73
       Thus   3
                       ———
                        219

Which muſt be divided by 9, and the Quote
added.   *(see p.* 46)

           9)219 .
             24|3
            ———
            243|3 True Product.

                 Otherwiſe,
Set the Product a Place farther to the left
Hand, ſupplying the Vacancy with 0, when
dividing the ſame by 9, you will have the true
Product at once.

       Thus   73
                           3
                        ———
                       9)2190
                       ———
                        243|3 True Product, as
                                   before.
Next multiply 24 by |3 Parts for the Hours.
       Thus   3
                ———
                9)72|0
                ———
                 8|0 *viz.* 8 Hours.

                                           If

If the Months in a Year, 12, be multi-
plied by |6̇, the firſt Expreſſion, the true
Product will be the Number of Months an-
ſwering thereto.

$$\text{Thus} \quad 12$$
$$|\dot{6}$$
$$9)72|0$$
$$\text{Months required} \quad 8|0$$

P R O B. XXII.

WHAT is the Intereſt of 225 *l.* 16 *s.* 7½ *d.*
for 327 Days at 5 *per Cent.*

$$\text{Expreſſion, } \&c. \qquad 225|83125$$
$$731$$
$$29358$$
$$1581$$
$$|030939$$
$$\text{Product a Fifth, } \&c. \qquad 3$$
$$|030936$$
$$327$$
$$92808..$$
$$835272$$
$$10|116072$$

Viz. 10 *l.* 2 *s.* 4 *d.* nearly.

A   M   This

This Contraction in multiplying by 327, is juft the Reverfe to that in pages 37 and 38; for 3 in 27 being 9 times, it is firft multiplied by 3, (*viz.* 300) and that again by 9, which is very plain and obvious.

It fometimes happens that any Digit may be exactly contained in the three next preceding or fucceeding, when you may operate in all refpects as before, *viz.* fuppofe any Number to be multiplied by 1449, here 144 divided by 9 gives 16, therefore firft multiplying by 9, and that Product by 16 in one Line, will give the Product required.

Or if the Multiplier be 9144, it would be firft multiplying by 9, and that Product again by 16, as in the laft Problem.

All which, at any time, may be eafily conceived by thofe who underftand but the firft four Rules of Arithmetic.

A P.

APPENDIX.

IN Page 67, &c. there is given a Method for Contracting in Multiplication, by inverting the Multiplier: But as the same may be performed without, I shall here give the Methods, that either may be used, as shall be best approved of.

In the common way of Multiplication, it is always usual to begin with the Unit's Place, &c. But it may as well be begun with the highest to the left Hand, Regard being had to the Value of the Place it posseffes.

EXAMPLE I.

Case I.	Case II.	Case III.
234	234	234..
234	234	432
936	468..	468..
702	702.	702.
468	936	936
54756	54756	54756

In the third Cafe, where the Mnltiplier is inverted, it falls two Places to the Right Hand beyond the Multiplicand, to which, by the Rule of Inverting, muft be annexed (or fuppofed, as above by Dots) fo many Cyphers to the Right Hand of the Multiplicand, till it becomes equal in Places with thofe of the inverted Multiplier.

Hence it is evident, by annexing two Cyphers to the Right Hand of the Multiplicand, is multiplying by 100 ; next, multiplying by 2, beginning at the Place over it, the Product will be equal to that in the fecond Cafe multiplied by 200 ; again, multiplying by 4, beginning at the Place over it, when one Cypher is only to be confidered as annexed to the Multiplicand, which is multiplying the fame by 10, and that again by 4, is multiplying by 40, as in the fecond Cafe, &c. all which is very obvious.

EXAMPLE II.

LET 45|4789 be multiplied by 6|235, fo as to have only three Places of Parts in the Product. †

CASE

---

† Which may be alfo for any other Number of Parts, or none. *See* p. 67, 70.

Case I.	Case II.
45|4789	45|4789
6|235	Multip. 532|6 inverted
272873	272873
9096	9096
1364	1364
227	227
283|560	283|560

Here it is to be obſerved (Caſe I.) as three Places of Parts only are required in the Product, that, inſtead of ſetting 6, the Unit's Place of the Multiplier, under 8, the third Place of Parts in the Multiplicand, and inverting ; the Multiplication is begun with 6 into 8, with the Addition of 5, the Carriage of 9 to the Right Hand, and ſo proceeding on gives 272873.

The next Figure to multiply by is here but two tenths, ſo much therefore of the Multiplicand, *viz.* 45\|4789 is only to be taken.

* One tenth whereof is 4\|54789, which now is to be multiplied by 2, ſo that three Places of Parts only may be in the Product ;

<center>M 3</center>   from

* See Note † p. 20.

from whence it is plain you muft begin at 7, having regard to the Carriage as before, (and under which in the fecond Cafe you find the 2 to ftand) and proceeding on as before you will have that Product accordingly.

The following Figure is but three hundredth Parts, and fo much of the Muliplicand is to be taken.

† One hundredth Part thereof is |454789, which is to be multiplied by 3, and that only three Places of Parts may be in the Product, it is obvious you muft begin multiplying at 4 in the Multiplicand ; under which you find it in Cafe II.

Laftly, 5 is but five thoufand Parts, and one thoufandth Part of the Multiplicand is |0454789, and by the foregoing it is evident you muft begin the Multiplication at 5 therein, under which alfo it ftands in Cafe II.

From hence it may be eafily obferved, that after your firft Multiplication you drop a Place to the Right Hand in the Multiplicand, when you begin with the fecond in the Multiplier, and fo on each Time, till all is finifhed.

It may likewife be obferved, that the Multiplication may be firft begun with the laft

† See Note * p. 61.

laſt Place to the Right Hand in the Multiplier, the Multiplicand being firſt formed, (or conceived ſo) accordingly, thus |0454789, one thouſanth Part of the Multiplicand (as above) is now to be multiplied by 5, that three Places of Parts may be in the Product ; whence it is obvious you muſt begin multiplying at 5 in the Multiplicand Regard being had in all Caſes to the Carriage of a Place or two to the Right Hand, as before taught) ; and when you multiply by 3, you muſt begin at 4 in the Multiplicand ; by 2 with the 7 ; and by 6 with the 8 ; juſt in all reſpects the Reverſe of the laſt.

Or in the inverted Order you may begin multiplying with the 5 firſt, and ſo on, which directly anſwers the ſame Purpoſe. Thus,

$$
\begin{array}{r}
45|4789 \\
532|6 \\
\hline
227 \\
1364 \\
9096 \\
272873 \\
\hline
283|560
\end{array}
$$

E X-

E X A M P L E III.

SUppofe 7645|4789 to be multiplied by
6546|235, to have only three Places of
Parts in the Product.

CASE I.	CASE II. inverted.
7645|4789	7645|4789 . .
6546|235	532|6456

In the firſt Caſe, if you begin multiplying
with 6, the higheſt Place in the Multiplier,
which is 6000, the Multiplicand being firſt
multiplied (or conceived) by 1000, will be
7645478|9, which is now to be multiplied
by 6, ſo that the Product may l ave but three
Places of Parts ; two Cyphers therefore muſt
be annexed (or ſuppoſed) after the 9 for
that Purpoſe, and then multiplied by 6,
which is anſwered by the Dots in Caſe II.
inverted. Theſe Examples being thoroughly
conſidered, the Reaſon for inverting the
Multiplier evidently appears ; which to Ty-
ro's and Perſons not very expert, will be
found much the ſureſt Way, and the leaſt
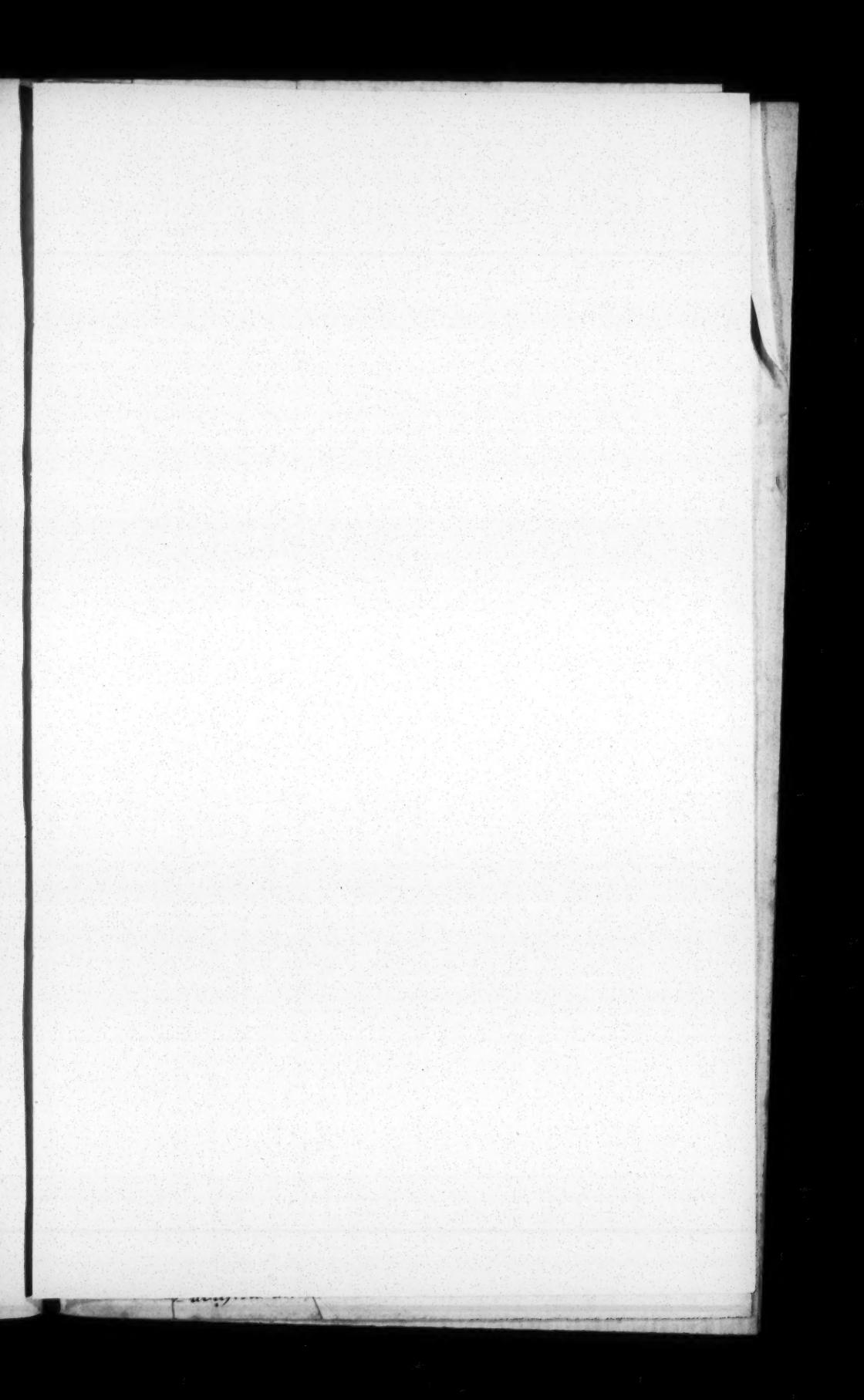liable to Miſtakes.

F I N I S.

Table to find the

Janua	Februa	March	April	M
0	31	59	90	12
365	334	306	275	24

Table for finding the

at 5 P.r Centum P. An

Prin	Interest Parts.	Prin £'s	Interest Parts	Prin £'s	Interest Parts
Pence. 2	1	1	137	26	3562
3½	2	2	274	27	3699
4	2	3	411	28	3836
5	3	4	548	29	3973
10	6	5	685	30	4110
11	6	6	822	31	4247
Shillings. 1	7	7	959	32	4384
2	14	8	1096	33	4521
3	21	9	1233	34	4658
4	27	10	1370	35	4795
5	34	11	1507	36	4932
Shillings. 6	41	12	1644	37	5068
7	48	13	1781	38	5205
8	55	14	1918	39	5342
9	62	15	2055	40	5479
10	68	16	2192	41	5616
Shillings. 11	75	17	2329	42	5753
12	82	18	2466	43	5890
13	89	19	2603	44	6027
14	96	20	2740	45	6164
15	103	21	2877	46	6301
Shillings. 16	110	22	3014	47	6438
17	116	23	3151	48	6575
18	123	24	3288	49	6712
19	130	25	3425	50	6849

—— Publish'd according to Act of Par

...nd the Number of Days from one Month to another &c.ᵃ

	April	May	June	July	Augt	Septr	Octor	Novr	Decem.
	90	120	151	181	212	243	273	304	334
	275	245	214	184	153	122	92	61	31

...ing the **Interest** of any Sum for one **Day** ...ꝑ Annum and thence for any Time & Rate.

Prin £s	Interest Parts	Brin £s	Interest Parts	Princip. Pounds	Int. Pts.	Princip. Pounds	Int. Pts.	Princip. Pounds	Int. Pts.	Princip. Pounds	Inte Pts.
6	3562	51	6986	73	.01	1898	.26	3723	.51	5548	.76
7	3699	52	7123	146	.02	1971	.27	3796	.52	5621	.77
8	3836	53	7260	219	.03	2044	.28	3869	.53	5694	.78
9	3973	54	7397	292	.04	2117	.29	3942	.54	5767	.79
0	4110	55	7534	365	.05	2190	.30	4015	.55	5840	.80
1	4247	56	7671	438	.06	2263	.31	4088	.56	5913	.81
2	4384	57	7808	511	.07	2336	.32	4161	.57	5986	.82
3	4521	58	7945	584	.08	2409	.33	4234	.58	6059	.83
4	4658	59	8082	657	.09	2482	.34	4307	.59	6132	.84
5	4795	60	8219	730	.10	2555	.35	4380	.60	6205	.85
6	4932	61	8356	803	.11	2628	.36	4453	.61	6278	.86
7	5068	62	8493	876	.12	2701	.37	4526	.62	6351	.87
8	5205	63	8630	949	.13	2774	.38	4599	.63	6424	.88
9	5342	64	8767	1022	.14	2847	.39	4672	.64	6497	.89
0	5479	65	8904	1095	.15	2920	.40	4745	.65	6570	.90
1	5616	66	9041	1168	.16	2993	.41	4818	.66	6643	.91
2	5753	67	9178	1241	.17	3066	.42	4891	.67	6716	.92
3	5890	68	9315	1314	.18	3139	.43	4964	.68	6789	.93
4	6027	69	9452	1387	.19	3212	.44	5037	.69	6862	.94
5	6164	70	9589	1460	.20	3285	.45	5110	.70	6935	.95
6	6301	71	9726	1533	.21	3358	.46	5183	.71	7008	.96
7	6438	72	9863	1606	.22	3431	.47	5256	.72	7081	.97
8	6575			1679	.23	3504	.48	5329	.73	7154	.98
9	6712	End of		1752	.24	3577	.49	5402	.74	7227	.99
0	6849	Part 1st		1825	.25	3650	.50	5475	.75	7300	1.00
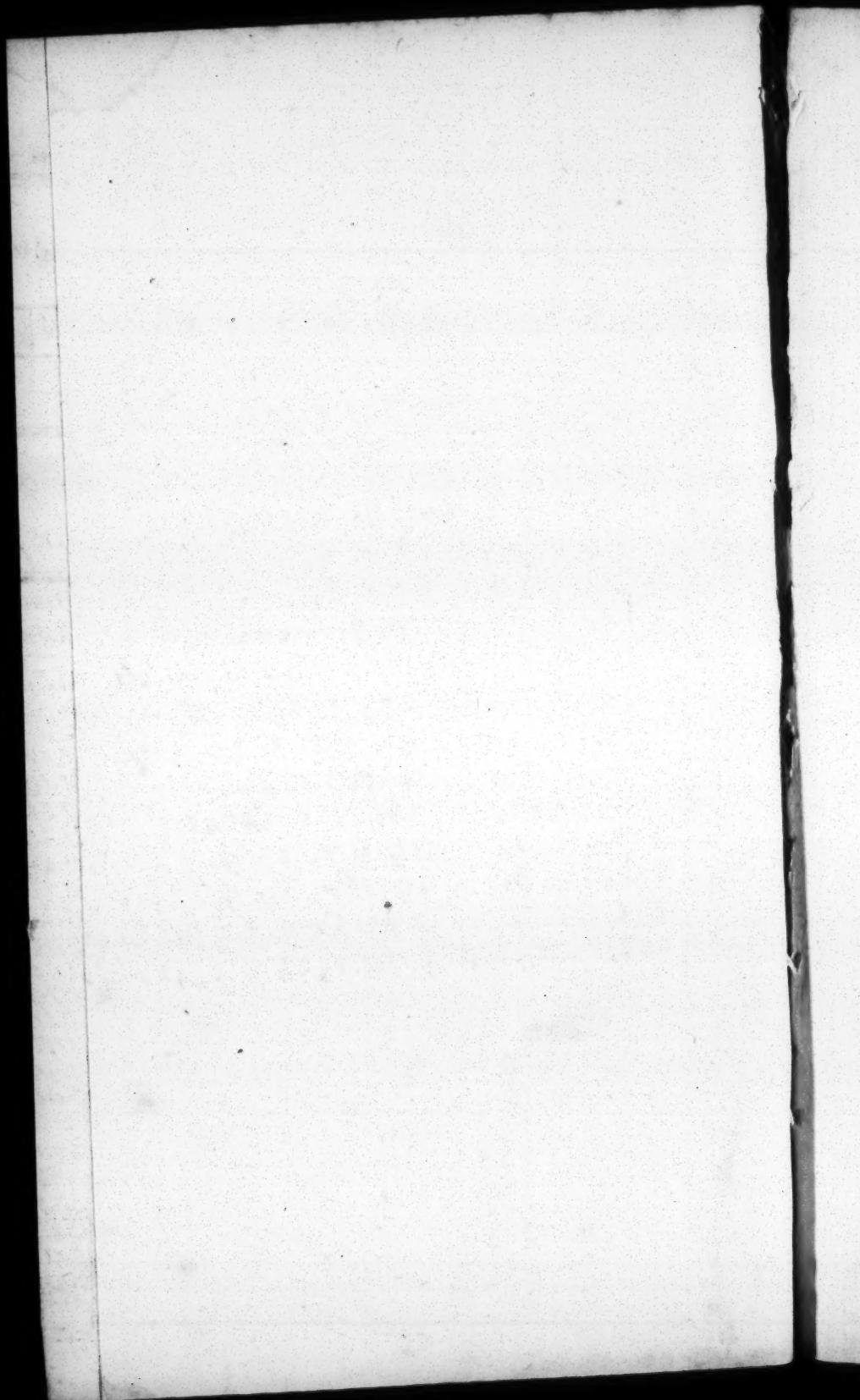
ERRATA.

P. 12, *Ex.* I. *for* 101 *r.* |01.
17, *line* 8,   2d *r.* 1ſt.
18,   4, *dele* of.
33,   6, *for* 108 *r.* 180.
46,   18,   * *r.* †.
ib.   20,   † *r.* *.
65,   10 d. *r.* 10 s.
66   9, *ſhould be a Place to the left.*
74,   11, *for* 253 *r.* 250.
88,   17,   1 s. 5 d. *r.* 1 s. 3 d.
89,   15,   44440 *r.* 4440.
102,   18,   16641 *r.* 18641.
110,   1,   19 6 *r.* 19 9.
112,   6,   19 s. *r.* 19 9.
114,   9,   5 per Cent. *r.* 3 per Cent.
118,   14, & 15, *for* 1324 *r.* 1342, *&c.*